Milliman
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Portland, OR 97204-3654
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November 2017

City of Salem/2101
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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City of Salem/2101

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Salem -- #2101

November 2017

Secondary Employers

2136	Salem Department Of Utilities
2748	Salem Area Mass Transit Authority

CONTENTS

Executive Summary

Milliman has prepared this report for City of Salem to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Salem.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Salem

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	17.36%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	16.09%	16.09%	16.09%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	(7.19%)	(7.19%)	(7.19%)
Net pension contribution rate	**27.82%**	**18.95%**	**23.68%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**28.31%**	**19.37%**	**24.10%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 67%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	26.55%	26.55%
Minimum 2019-2021 Rate	21.24%	15.93%
Maximum 2019-2021 Rate	31.86%	37.17%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$385,499,542	$465,044,196	$79,544,654	83%	$77,274,971	103%
12/31/2012	426,847,155	469,350,980	42,503,825	91%	77,123,538	55%
12/31/2013	468,955,181	486,497,219	17,542,038	96%	76,037,921	23%
12/31/2014	479,801,993	575,755,235	95,953,242	83%	76,521,581	125%
12/31/2015	467,585,026	598,989,240	131,404,214	78%	78,129,106	168%
12/31/2016	472,181,008	631,273,036	159,092,028	75%	80,370,324	198%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

City of Salem

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$211,082,401	$185,248,139
Allocated pooled OPSRP UAL	13,836,731	11,107,142
Side account	51,990,373	53,843,926
Net unfunded pension actuarial accrued liability	172,928,759	142,511,355
Combined valuation payroll	80,370,324	78,129,106
Net pension UAL as a percentage of payroll	215%	182%
Calculated side account rate relief	(7.19%)	(7.25%)
Allocated pooled RHIA UAL	($10,943)	$379,368

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$7,500,145	$7,951,773
Tier 1/Tier 2 valuation payroll	43,210,645	46,642,989
Tier 1/Tier 2 pension normal cost rate	17.36%	17.05%
Tier 1/ Tier 2 Actuarial accrued liability	$631,273,036	$598,989,240
Actuarial asset value	420,190,635	413,741,101
Tier 1/Tier 2 Unfunded actuarial accrued liability	211,082,401	185,248,139
Tier 1/ Tier 2 Funded status	67%	69%
Combined valuation payroll	$80,370,324	$78,129,106
Tier 1/Tier 2 UAL as a percentage of payroll	263%	237%
Tier 1/Tier 2 UAL rate	16.09%	9.50%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	520	575
Tier 1/Tier 2 dormant members	259	250
Tier 1/Tier 2 retirees and beneficiaries	1,161	1,130

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**	**$53,843,925**	**$53,843,925**
2. Deposits made during 2016		N/A	
3. Administrative expenses		(2,000)	(2,000)
4. Amount transferred to employer reserves during 2016		(5,543,710)	(5,543,710)
5. Side account earnings during 2016		3,692,158	3,692,158
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***		**$51,990,373**	**$51,990,373**

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$48,653,576	$50,391,167
Side account 2	3,336,798	3,452,759
Side account 3	0	0
Total	**$51,990,373**	**$53,843,925**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$51,990,373	$53,843,925
2. Combined valuation payroll	80,370,324	78,129,106
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	(7.19%)	(7.25%)

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$46,160,521	$50,955,154
2. Employer reserves	203,201,758	189,909,339
3. Benefits in force reserve	170,828,356	172,876,608
4. Total market value of assets ***(1. + 2. + 3.)***	**$420,190,635**	**$413,741,101**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$413,741,101
2.	Regular employer contributions	6,776,134
3.	Benefit payments and expenses	(33,447,345)
4.	Adjustments [1]	(1,448,526)
5.	Interest credited	29,025,562
6.	Total transferred from side accounts	5,543,710
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$420,190,635**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Tier 1 Police & Fire	$1,979,084	$2,125,949
Tier 1 General Service	1,563,888	1,874,294
Tier 2 Police & Fire	2,133,545	2,084,751
Tier 2 General Service	1,823,628	1,866,779
Total	**$7,500,145**	**$7,951,773**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$7,287,778	$7,500,145	$212,367

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$63,523,662	$65,428,294
▪ Tier 1 General Service	51,497,369	59,434,390
▪ Tier 2 Police & Fire	42,011,439	36,795,120
▪ Tier 2 General Service	43,468,684	40,220,165
▪ **Total Active Members**	**$200,501,154**	**$201,877,969**
Dormant Members	27,335,158	23,837,575
Retired Members and Beneficiaries	403,436,724	373,273,696
Total Actuarial Accrued Liability	**$631,273,036**	**$598,989,240**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$614,241,849	$631,273,036	$17,031,187

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$631,273,036	$598,989,240
2. Actuarial value of assets	420,190,635	413,741,101
3. Unfunded accrued liability *(1. – 2.)*	211,082,401	185,248,139
4. Funded percentage *(2. ÷ 1.)*	67%	69%
5. Combined valuation payroll	$80,370,324	$78,129,106
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	263%	237%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$75,151,213	$5,843,341	$5,402,893	$74,710,765	$5,920,967
December 31, 2015	$110,096,926	$7,966,492	$7,938,999	$110,069,433	$8,054,254
December 31, 2016	N/A	N/A	N/A	$26,302,203	$1,857,107
Total				**$211,082,401**	**$15,832,328**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$598,989,240
b. Normal cost at December 31, 2015 (excluding assumed expenses)	7,582,607
c. Benefit payments during 2016	(33,166,075)
d. Interest at 7.50% to December 31, 2016	43,964,813
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	617,370,585
f. Change in actuarial accrued liability due to assumption, method, and plan changes	17,031,187
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	634,401,772
2. Actuarial accrued liability at December 31, 2016	631,273,036
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	3,128,736
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	413,741,101
b. Contributions for 2016[1]	12,319,844
c. Benefit payments and expenses during 2016	(33,447,345)
d. Interest at 7.50% to December 31, 2016	30,238,301
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	422,851,901
5. Actuarial value of assets at December 31, 2016	420,190,635
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(2,661,266)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$467,470**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$185,248,139**
2. Expected increase	9,270,545
3. Liability (gain)/loss	(3,128,736)
4. Asset (gain)/loss	2,661,266
5. Change due to changes in assumptions, methods, and plan provisions	17,031,187
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$211,082,401**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$1,979,084	$8,489,920	23.31%	$2,125,949	$9,444,135	22.51%
Tier 1 General Service	1,563,888	9,354,510	16.72%	1,874,294	10,927,881	17.15%
Tier 2 Police & Fire	2,133,545	11,015,329	19.37%	2,084,751	11,276,923	18.49%
Tier 2 General Service	1,823,628	14,350,886	12.71%	1,866,779	14,994,050	12.45%
Total	**$7,500,145**	**$43,210,645**	**17.36%**	**$7,951,773**	**$46,642,989**	**17.05%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$211,082,401	$185,248,139
2. Next year's Tier 1/Tier 2 UAL payment	15,832,328	13,809,833
3. Combined valuation payroll	80,370,324	78,129,106
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	19.70%	17.68%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.36%	17.05%
b. Tier 1/Tier 2 UAL rate	19.70%	17.68%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	37.20%	34.88%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	19.30%
2. Employer contribution rate attributable to side accounts	(7.25%)
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	26.55%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	5.31%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	5.31%
c. Funded percentage	67%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.90%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	19.65%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	33.45%
7. Advisory July 1, 2019 total pension rate, before adjustment	37.20%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(3.75%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	19.70%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	15.95%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	33.45%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.36%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.36%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	33.45%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.36%	17.05%
b. Tier 1/Tier 2 UAL rate	15.95%	9.35%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	33.45%	26.55%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$9,354,510	$8,489,920	$17,844,430
Tier 2	14,350,886	11,015,329	25,366,215
Tier 1/Tier 2 valuation payroll	23,705,396	19,505,249	43,210,645
OPSRP valuation payroll	26,071,188	11,088,491	37,159,679
Combined valuation payroll	**$49,776,584**	**$30,593,740**	**$80,370,324**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	127	205	440	772	150	219	386	755
Police & Fire	82	106	131	319	92	114	111	317
Total	209	311	571	1,091	242	333	497	1,072
Active Members with previous service segments with the employer								
General Service	121	169	N/A	290	132	157	N/A	289
Police & Fire	38	26	N/A	64	39	21	N/A	60
Total	159	195	N/A	354	171	178	N/A	349
Dormant Members								
General Service	109	120	45	274	105	118	45	268
Police & Fire	19	11	7	37	18	9	7	34
Total	128	131	52	311	123	127	52	302
Retired Members and Beneficiaries								
General Service	728	95	14	837	683	114	12	809
Police & Fire	333	5	0	338	313	20	0	333
Total	1,061	100	14	1,175	996	134	12	1,142
Grand Total Number of Members	**1,557**	**737**	**637**	**2,931**	**1,532**	**772**	**561**	**2,865**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34		1	1	1						**3**
35-39			23	7						**30**
40-44			28	50	9					**87**
45-49		1	12	52	45	4	1			**115**
50-54		2	18	42	26	19	1			**108**
55-59			18	27	17	25	4	1		**92**
60-64			6	19	17	13	5	3		**63**
65-69			5	4	3	5	1	1		**19**
70-74			1			1			1	**3**
75+										
Total	**0**	**4**	**112**	**202**	**117**	**67**	**12**	**5**	**1**	**520**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34	1	433
35-39	11	457
40-44	35	538
45-49	46	1,197
50-54	45	968
55-59	56	959
60-64	41	884
65-69	15	573
70-74	4	2,093
75+	5	2,518
Total	259	936

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	6	821
45-49	6	1,466
50-54	25	2,771
55-59	63	2,814
60-64	230	2,627
65-69	301	2,215
70-74	256	2,139
75-79	138	2,071
80-84	74	1,636
85-89	41	1,236
90-94	18	1,396
95-99	3	305
100+		
Total	1,161	2,207

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

City of Sheridan/2219
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
City of Sheridan/2219

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Sheridan -- #2219

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for City of Sheridan to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Sheridan.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Sheridan

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.60%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	2.79%	2.79%	2.79%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**17.95%**	**12.84%**	**17.57%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**18.44%**	**13.26%**	**17.99%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 74%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	13.39%	13.39%
Minimum 2019-2021 Rate	10.39%	7.39%
Maximum 2019-2021 Rate	16.39%	19.39%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$3,351,410	$3,904,549	$553,139	86%	$843,575	66%
12/31/2012	3,729,854	3,992,295	262,441	93%	923,697	28%
12/31/2013	4,145,881	4,051,158	(94,723)	102%	926,539	(10%)
12/31/2014	4,266,358	4,710,044	443,686	91%	977,728	45%
12/31/2015	4,128,792	4,677,824	549,032	88%	1,005,883	55%
12/31/2016	3,785,774	5,107,140	1,321,366	74%	955,992	138%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

City of Sheridan

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$1,321,366	$549,032
Allocated pooled OPSRP UAL	164,586	143,000
Side account	0	0
Net unfunded pension actuarial accrued liability	1,485,952	692,032
Combined valuation payroll	955,992	1,005,883
Net pension UAL as a percentage of payroll	155%	69%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($130)	$4,884

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$64,106	$91,293
Tier 1/Tier 2 valuation payroll	471,526	577,624
Tier 1/Tier 2 pension normal cost rate	13.60%	15.80%
Tier 1/ Tier 2 Actuarial accrued liability	$5,107,140	$4,677,824
Actuarial asset value	3,785,774	4,128,792
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,321,366	549,032
Tier 1/ Tier 2 Funded status	74%	88%
Combined valuation payroll	$955,992	$1,005,883
Tier 1/Tier 2 UAL as a percentage of payroll	138%	55%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	2.79%	(2.41%)
Tier 1/Tier 2 active members [1]	7	9
Tier 1/Tier 2 dormant members	2	2
Tier 1/Tier 2 retirees and beneficiaries	25	23

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	955,992	1,005,883
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$218,393	$582,109
2. Employer reserves	2,035,470	2,420,472
3. Benefits in force reserve	1,531,911	1,126,211
4. Total market value of assets ***(1. + 2. + 3.)***	**$3,785,774**	**$4,128,792**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$4,128,792
2.	Regular employer contributions	43,193
3.	Benefit payments and expenses	(299,941)
4.	Adjustments [1]	(358,021)
5.	Interest credited	271,750
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$3,785,774**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	14,397	45,031
Tier 2 Police & Fire	0	0
Tier 2 General Service	49,709	46,262
Total	**$64,106**	**$91,293**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$62,583	$64,106	$1,523

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	468,490	1,353,198
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	1,002,430	877,160
▪ **Total Active Members**	**$1,470,920**	**$2,230,358**
Dormant Members	18,383	15,761
Retired Members and Beneficiaries	3,617,837	2,431,705
Total Actuarial Accrued Liability	**$5,107,140**	**$4,677,824**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$4,960,526	$5,107,140	$146,614

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$5,107,140	$4,677,824
2. Actuarial value of assets	3,785,774	4,128,792
3. Unfunded accrued liability *(1. – 2.)*	1,321,366	549,032
4. Funded percentage *(2. ÷ 1.)*	74%	88%
5. Combined valuation payroll	$955,992	$1,005,883
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	138%	55%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($94,650)	($7,359)	($6,805)	($94,096)	($7,457)
December 31, 2015	$643,682	$46,576	$46,415	$643,521	$47,089
December 31, 2016	N/A	N/A	N/A	$771,941	$54,504
Total				**$1,321,366**	**$94,136**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$4,677,824
b. Normal cost at December 31, 2015 (excluding assumed expenses)	87,069
c. Benefit payments during 2016	(297,418)
d. Interest at 7.50% to December 31, 2016	342,949
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	4,810,424
f. Change in actuarial accrued liability due to assumption, method, and plan changes	146,614
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	4,957,038
2. Actuarial accrued liability at December 31, 2016	5,107,140
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(150,102)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	4,128,792
b. Contributions for 2016[1]	43,193
c. Benefit payments and expenses during 2016	(299,941)
d. Interest at 7.50% to December 31, 2016	300,031
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	4,172,076
5. Actuarial value of assets at December 31, 2016	3,785,774
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(386,302)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($536,404)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$549,032**
2. Expected increase	89,316
3. Liability (gain)/loss	150,102
4. Asset (gain)/loss	386,302
5. Change due to changes in assumptions, methods, and plan provisions	146,614
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$1,321,366**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	14,397	93,009	15.48%	45,031	215,801	20.87%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	49,709	378,517	13.13%	46,262	361,823	12.79%
Total	**$64,106**	**$471,526**	**13.60%**	**$91,293**	**$577,624**	**15.80%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$1,321,366	$549,032
2. Next year's Tier 1/Tier 2 UAL payment	94,136	39,217
3. Combined valuation payroll	955,992	1,005,883
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	9.85%	3.90%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.60%	15.80%
b. Tier 1/Tier 2 UAL rate	9.85%	3.90%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	23.59%	19.85%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	13.39%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	13.39%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.68%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	74%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	10.39%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	16.39%
7. Advisory July 1, 2019 total pension rate, before adjustment	23.59%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(7.20%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	9.85%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	2.65%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	16.39%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.60%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.60%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	16.39%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.60%	15.80%
b. Tier 1/Tier 2 UAL rate	2.65%	(2.56%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	16.39%	13.39%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$93,009	$0	$93,009
Tier 2	378,517	0	378,517
Tier 1/Tier 2 valuation payroll	471,526	0	471,526
OPSRP valuation payroll	484,466	0	484,466
Combined valuation payroll	**$955,992**	**$0**	**$955,992**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	6	10	17	3	6	9	18
Police & Fire	0	0	0	0	0	0	0	0
Total	1	6	10	17	3	6	9	18
Active Members with previous service segments with the employer								
General Service	1	0	N/A	1	1	0	N/A	1
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	0	N/A	1	1	0	N/A	1
Dormant Members								
General Service	0	2	0	2	0	2	0	2
Police & Fire	0	0	0	0	0	0	0	0
Total	0	2	0	2	0	2	0	2
Retired Members and Beneficiaries								
General Service	15	2	0	17	13	2	0	15
Police & Fire	8	0	0	8	8	0	0	8
Total	23	2	0	25	21	2	0	23
Grand Total Number of Members	**25**	**10**	**10**	**45**	**25**	**10**	**9**	**44**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44				1						**1**
45-49										
50-54				1						**1**
55-59		1		2						**3**
60-64					2					**2**
65-69										
70-74										
75+										
Total	**0**	**1**	**0**	**4**	**2**	**0**	**0**	**0**	**0**	**7**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	1	489
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+	1	30
Total	2	260

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49	1	664
50-54		
55-59	1	105
60-64	4	1,233
65-69	7	1,298
70-74	5	1,613
75-79	3	118
80-84	2	215
85-89		
90-94	2	233
95-99		
100+		
Total	25	964

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

City of Stanfield/2213
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
City of Stanfield/2213

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Stanfield -- #2213

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for City of Stanfield to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Stanfield.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Stanfield

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.38%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(10.88%)	(10.88%)	(10.88%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**10.06%**	**0.00%**	**3.90%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**10.55%**	**0.42%**	**4.32%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 124%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	5.50%	5.50%
Minimum 2019-2021 Rate	2.50%	0.00%
Maximum 2019-2021 Rate	8.50%	11.50%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$2,037,197	$1,602,362	($434,835)	127%	$379,898	(114%)
12/31/2012	2,276,037	1,638,465	(637,572)	139%	398,287	(160%)
12/31/2013	2,563,919	1,711,052	(852,867)	150%	390,228	(219%)
12/31/2014	2,677,365	1,948,398	(728,967)	137%	437,262	(167%)
12/31/2015	2,670,874	2,106,399	(564,475)	127%	482,612	(117%)
12/31/2016	2,723,656	2,200,374	(523,282)	124%	427,756	(122%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

City of Stanfield

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($523,282)	($564,475)
Allocated pooled OPSRP UAL	73,643	68,610
Side account	0	0
Net unfunded pension actuarial accrued liability	(449,639)	(495,865)
Combined valuation payroll	427,756	482,612
Net pension UAL as a percentage of payroll	(105%)	(103%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($58)	$2,343

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$28,472	$25,946
Tier 1/Tier 2 valuation payroll	146,888	177,903
Tier 1/Tier 2 pension normal cost rate	19.38%	14.77%
Tier 1/ Tier 2 Actuarial accrued liability	$2,200,374	$2,106,399
Actuarial asset value	2,723,656	2,670,874
Tier 1/Tier 2 Unfunded actuarial accrued liability	(523,282)	(564,475)
Tier 1/ Tier 2 Funded status	124%	127%
Combined valuation payroll	$427,756	$482,612
Tier 1/Tier 2 UAL as a percentage of payroll	(122%)	(117%)
Tier 1/Tier 2 UAL rate	(10.88%)	(9.27%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	6	7
Tier 1/Tier 2 retirees and beneficiaries	15	14

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	427,756	482,612
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$319,156	$336,872
2. Employer reserves	1,991,842	1,954,763
3. Benefits in force reserve	412,658	379,239
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,723,656**	**$2,670,874**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$2,670,874
2. Regular employer contributions	(24,547)
3. Benefit payments and expenses	(80,796)
4. Adjustments [1]	(28,231)
5. Interest credited	186,357
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,723,656**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	13,292	14,002
Tier 2 Police & Fire	14,614	11,578
Tier 2 General Service	566	366
Total	**$28,472**	**$25,946**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$27,806	$28,472	$666

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$66,984	$59,956
▪ Tier 1 General Service	381,620	397,392
▪ Tier 2 Police & Fire	284,945	254,973
▪ Tier 2 General Service	167,683	146,122
▪ **Total Active Members**	**$901,232**	**$858,443**
Dormant Members	324,588	429,107
Retired Members and Beneficiaries	974,554	818,849
Total Actuarial Accrued Liability	**$2,200,374**	**$2,106,399**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$2,151,283	$2,200,374	$49,091

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$2,200,374	$2,106,399
2. Actuarial value of assets	2,723,656	2,670,874
3. Unfunded accrued liability *(1. – 2.)*	(523,282)	(564,475)
4. Funded percentage *(2. ÷ 1.)*	124%	127%
5. Combined valuation payroll	$427,756	$482,612
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(122%)	(117%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($852,210)	($66,263)	($61,268)	($847,215)	($67,143)
December 31, 2015	$287,735	$20,820	$20,748	$287,663	$21,050
December 31, 2016	N/A	N/A	N/A	$36,270	$2,561
Total				**($523,282)**	**($43,532)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$2,106,399
b. Normal cost at December 31, 2015 (excluding assumed expenses)	24,860
c. Benefit payments during 2016	(80,117)
d. Interest at 7.50% to December 31, 2016	155,908
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,207,050
f. Change in actuarial accrued liability due to assumption, method, and plan changes	49,091
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	2,256,141
2. Actuarial accrued liability at December 31, 2016	2,200,374
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	55,767
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	2,670,874
b. Contributions for 2016[1]	(24,547)
c. Benefit payments and expenses during 2016	(80,796)
d. Interest at 7.50% to December 31, 2016	196,365
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	2,761,896
5. Actuarial value of assets at December 31, 2016	2,723,656
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(38,239)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$17,528**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($564,475)**
2. Expected increase	9,630
3. Liability (gain)/loss	(55,767)
4. Asset (gain)/loss	38,239
5. Change due to changes in assumptions, methods, and plan provisions	49,091
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($523,282)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	13,292	68,510	19.40%	14,002	78,818	17.76%
Tier 2 Police & Fire	14,614	74,196	19.70%	11,578	96,140	12.04%
Tier 2 General Service	566	4,182	13.53%	366	2,945	12.43%
Total	**$28,472**	**$146,888**	**19.38%**	**$25,946**	**$177,903**	**14.58%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($523,282)	($564,475)
2. Next year's Tier 1/Tier 2 UAL payment	(43,532)	(45,443)
3. Combined valuation payroll	427,756	482,612
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(10.18%)	(9.42%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.38%	14.58%
b. Tier 1/Tier 2 UAL rate	(10.18%)	(9.42%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	9.34%	5.31%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	5.50%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	5.50%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.10%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	124%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	2.50%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	8.50%
7. Advisory July 1, 2019 total pension rate, before adjustment	9.34%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.84%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(10.18%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(11.02%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	8.50%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	19.38%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.38%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	8.50%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.38%	14.77%
b. Tier 1/Tier 2 UAL rate	(11.02%)	(9.42%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	8.50%	5.50%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$68,510	$0	$68,510
Tier 2	4,182	74,196	78,378
Tier 1/Tier 2 valuation payroll	72,692	74,196	146,888
OPSRP valuation payroll	182,258	98,610	280,868
Combined valuation payroll	**$254,950**	**$172,806**	**$427,756**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	1	5	7	1	1	5	7
Police & Fire	0	1	2	3	0	1	3	4
Total	1	2	7	10	1	2	8	11
Active Members with previous service segments with the employer								
General Service	1	2	N/A	3	1	2	N/A	3
Police & Fire	2	2	N/A	4	2	2	N/A	4
Total	3	4	N/A	7	3	4	N/A	7
Dormant Members								
General Service	2	1	0	3	2	2	0	4
Police & Fire	1	2	0	3	1	2	0	3
Total	3	3	0	6	3	4	0	7
Retired Members and Beneficiaries								
General Service	6	2	0	8	6	1	0	7
Police & Fire	6	1	0	7	6	1	0	7
Total	12	3	0	15	12	2	0	14
Grand Total Number of Members	**19**	**12**	**7**	**38**	**19**	**12**	**8**	**39**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44				1						1
45-49										
50-54						1				1
55-59										
60-64										
65-69										
70-74										
75+				1						1
Total	0	0	0	2	0	1	0	0	0	3

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	1	702
40-44	1	266
45-49		
50-54	2	1,139
55-59		
60-64	1	53
65-69		
70-74	1	103
75+		
Total	6	567

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	1	43
55-59		
60-64	2	429
65-69	3	291
70-74	5	158
75-79	2	1,848
80-84	1	633
85-89		
90-94	1	43
95-99		
100+		
Total	15	462

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

City of Sweet Home/2129
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
City of Sweet Home/2129

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Sweet Home -- #2129

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for City of Sweet Home to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Sweet Home.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Sweet Home

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	17.71%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(6.24%)	(6.24%)	(6.24%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**13.03%**	**3.81%**	**8.54%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**13.52%**	**4.23%**	**8.96%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 95%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	8.47%	8.47%
Minimum 2019-2021 Rate	5.47%	2.47%
Maximum 2019-2021 Rate	11.47%	14.47%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$6,785,370	$6,077,241	($708,129)	112%	$636,038	(111%)
12/31/2012	7,035,389	5,996,351	(1,039,038)	117%	770,371	(135%)
12/31/2013	7,787,332	6,150,297	(1,637,035)	127%	764,975	(214%)
12/31/2014	8,111,359	7,283,771	(827,588)	111%	909,894	(91%)
12/31/2015	7,977,353	7,913,088	(64,265)	101%	951,790	(7%)
12/31/2016	8,126,131	8,586,124	459,993	95%	978,604	47%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

City of Sweet Home

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$459,993	($64,265)
Allocated pooled OPSRP UAL	168,479	135,310
Side account	0	0
Net unfunded pension actuarial accrued liability	628,472	71,045
Combined valuation payroll	978,604	951,790
Net pension UAL as a percentage of payroll	64%	7%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($133)	$4,622

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$82,226	$76,120
Tier 1/Tier 2 valuation payroll	464,282	448,571
Tier 1/Tier 2 pension normal cost rate	17.71%	16.97%
Tier 1/ Tier 2 Actuarial accrued liability	$8,586,124	$7,913,088
Actuarial asset value	8,126,131	7,977,353
Tier 1/Tier 2 Unfunded actuarial accrued liability	459,993	(64,265)
Tier 1/ Tier 2 Funded status	95%	101%
Combined valuation payroll	$978,604	$951,790
Tier 1/Tier 2 UAL as a percentage of payroll	47%	(7%)
Tier 1/Tier 2 UAL rate	(6.24%)	(8.50%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	6	6
Tier 1/Tier 2 dormant members	4	4
Tier 1/Tier 2 retirees and beneficiaries	22	18

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	978,604	951,790
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$944,989	$1,029,762
2. Employer reserves	5,296,496	5,150,355
3. Benefits in force reserve	1,884,646	1,797,236
4. Total market value of assets ***(1. + 2. + 3.)***	**$8,126,131**	**$7,977,353**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$7,977,353
2.	Regular employer contributions	(29,914)
3.	Benefit payments and expenses	(369,004)
4.	Adjustments [1]	(10,140)
5.	Interest credited	557,837
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$8,126,131**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$17,362	$16,063
Tier 1 General Service	0	0
Tier 2 Police & Fire	54,253	49,995
Tier 2 General Service	10,611	10,062
Total	**$82,226**	**$76,120**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$79,314	$82,226	$2,912

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$1,671,306	$1,819,953
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	2,065,513	1,838,822
▪ Tier 2 General Service	249,351	218,581
▪ **Total Active Members**	**$3,986,170**	**$3,877,356**
Dormant Members	149,080	155,155
Retired Members and Beneficiaries	4,450,874	3,880,577
Total Actuarial Accrued Liability	**$8,586,124**	**$7,913,088**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$8,329,312	$8,586,124	$256,812

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$8,586,124	$7,913,088
2. Actuarial value of assets	8,126,131	7,977,353
3. Unfunded accrued liability *(1. – 2.)*	459,993	(64,265)
4. Funded percentage *(2. ÷ 1.)*	95%	101%
5. Combined valuation payroll	$978,604	$951,790
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	47%	(7%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($1,635,772)	($127,189)	($117,602)	($1,626,185)	($128,878)
December 31, 2015	$1,571,507	$113,713	$113,320	$1,571,114	$114,965
December 31, 2016	N/A	N/A	N/A	$515,064	$36,367
Total				**$459,993**	**$22,454**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$7,913,088
b. Normal cost at December 31, 2015 (excluding assumed expenses)	72,598
c. Benefit payments during 2016	(365,901)
d. Interest at 7.50% to December 31, 2016	582,483
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	8,202,268
f. Change in actuarial accrued liability due to assumption, method, and plan changes	256,812
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	8,459,080
2. Actuarial accrued liability at December 31, 2016	8,586,124
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(127,044)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	7,977,353
b. Contributions for 2016[1]	(29,914)
c. Benefit payments and expenses during 2016	(369,004)
d. Interest at 7.50% to December 31, 2016	583,342
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	8,161,776
5. Actuarial value of assets at December 31, 2016	8,126,131
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(35,645)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($162,689)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($64,265)**
2. Expected increase	104,757
3. Liability (gain)/loss	127,044
4. Asset (gain)/loss	35,645
5. Change due to changes in assumptions, methods, and plan provisions	256,812
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$459,993**

1 *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$17,362	$80,421	21.59%	$16,063	$78,039	20.58%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	54,253	290,669	18.66%	49,995	280,043	17.85%
Tier 2 General Service	10,611	93,192	11.39%	10,062	90,489	11.12%
Total	**$82,226**	**$464,282**	**17.71%**	**$76,120**	**$448,571**	**16.97%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$459,993	($64,265)
2. Next year's Tier 1/Tier 2 UAL payment	22,454	(13,476)
3. Combined valuation payroll	978,604	951,790
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	2.29%	(1.42%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.71%	16.97%
b. Tier 1/Tier 2 UAL rate	2.29%	(1.42%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	20.14%	15.70%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	8.47%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	8.47%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.69%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	95%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	5.47%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	11.47%
7. Advisory July 1, 2019 total pension rate, before adjustment	20.14%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(8.67%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	2.29%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(6.38%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	11.47%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.71%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.71%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	11.47%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.71%	16.97%
b. Tier 1/Tier 2 UAL rate	(6.38%)	(8.65%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	11.47%	8.47%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$80,421	$80,421
Tier 2	93,192	290,669	383,861
Tier 1/Tier 2 valuation payroll	93,192	371,090	464,282
OPSRP valuation payroll	0	514,322	514,322
Combined valuation payroll	**$93,192**	**$885,412**	**$978,604**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	0	1	0	1	0	1
Police & Fire	1	4	8	13	1	4	9	14
Total	1	5	8	14	1	5	9	15
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	11	14	N/A	25	14	14	N/A	28
Total	11	14	N/A	25	14	14	N/A	28
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	3	1	1	5	3	1	1	5
Total	3	1	1	5	3	1	1	5
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	21	1	0	22	17	1	0	18
Total	21	1	0	22	17	1	0	18
Grand Total Number of Members	**36**	**21**	**9**	**66**	**35**	**21**	**10**	**66**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39			1							**1**
40-44				2						**2**
45-49			1	1	1					**3**
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**2**	**3**	**1**	**0**	**0**	**0**	**0**	**6**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	1	35
40-44		
45-49	1	36
50-54	1	148
55-59		
60-64	1	766
65-69		
70-74		
75+		
Total	4	246

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	4	571
55-59	4	924
60-64	6	1,630
65-69	5	623
70-74	3	1,726
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	22	1,093

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

City of Waldport/2261
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
City of Waldport/2261

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Waldport -- #2261

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for City of Waldport to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Waldport.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Waldport

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	15.64%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(1.95%)	(1.95%)	(1.95%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**15.25%**	**8.10%**	**12.83%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**15.74%**	**8.52%**	**13.25%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 93%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	10.69%	10.69%
Minimum 2019-2021 Rate	7.69%	4.69%
Maximum 2019-2021 Rate	13.69%	16.69%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$2,991,828	$2,932,896	($58,932)	102%	$640,777	(9%)
12/31/2012	3,384,024	3,149,005	(235,019)	107%	689,451	(34%)
12/31/2013	3,784,497	3,288,088	(496,409)	115%	651,864	(76%)
12/31/2014	3,599,425	3,339,642	(259,783)	108%	636,448	(41%)
12/31/2015	3,514,763	3,546,561	31,798	99%	759,059	4%
12/31/2016	3,536,625	3,801,272	264,647	93%	784,239	34%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

City of Waldport

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$264,647	$31,798
Allocated pooled OPSRP UAL	135,016	107,911
Side account	0	0
Net unfunded pension actuarial accrued liability	399,663	139,709
Combined valuation payroll	784,239	759,059
Net pension UAL as a percentage of payroll	51%	18%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($107)	$3,686

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$43,086	$48,850
Tier 1/Tier 2 valuation payroll	275,443	318,387
Tier 1/Tier 2 pension normal cost rate	15.64%	15.34%
Tier 1/ Tier 2 Actuarial accrued liability	$3,801,272	$3,546,561
Actuarial asset value	3,536,625	3,514,763
Tier 1/Tier 2 Unfunded actuarial accrued liability	264,647	31,798
Tier 1/ Tier 2 Funded status	93%	99%
Combined valuation payroll	$784,239	$759,059
Tier 1/Tier 2 UAL as a percentage of payroll	34%	4%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(1.95%)	(4.65%)
Tier 1/Tier 2 active members [1]	5	6
Tier 1/Tier 2 dormant members	4	4
Tier 1/Tier 2 retirees and beneficiaries	23	22

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	784,239	759,059
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$452,419	$477,049
2. Employer reserves	2,172,156	2,178,634
3. Benefits in force reserve	912,051	859,081
4. Total market value of assets ***(1. + 2. + 3.)***	**$3,536,625**	**$3,514,763**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$3,514,763
2. Regular employer contributions	(2,025)
3. Benefit payments and expenses	(178,575)
4. Adjustments [1]	(44,746)
5. Interest credited	247,209
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$3,536,625**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	33,319	39,675
Tier 2 Police & Fire	0	0
Tier 2 General Service	9,767	9,175
Total	**$43,086**	**$48,850**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$42,214	$43,086	$872

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$146,102	$139,978
▪ Tier 1 General Service	695,810	801,931
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	219,212	194,452
▪ **Total Active Members**	**$1,061,124**	**$1,136,361**
Dormant Members	586,203	555,280
Retired Members and Beneficiaries	2,153,945	1,854,920
Total Actuarial Accrued Liability	**$3,801,272**	**$3,546,561**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$3,694,868	$3,801,272	$106,404

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$3,801,272	$3,546,561
2. Actuarial value of assets	3,536,625	3,514,763
3. Unfunded accrued liability *(1. – 2.)*	264,647	31,798
4. Funded percentage *(2. ÷ 1.)*	93%	99%
5. Combined valuation payroll	$784,239	$759,059
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	34%	4%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($496,025)	($38,568)	($35,661)	($493,118)	($39,081)
December 31, 2015	$527,823	$38,193	$38,061	$527,691	$38,613
December 31, 2016	N/A	N/A	N/A	$230,074	$16,245
Total				**$264,647**	**$15,777**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$3,546,561
b. Normal cost at December 31, 2015 (excluding assumed expenses)	46,588
c. Benefit payments during 2016	(177,073)
d. Interest at 7.50% to December 31, 2016	261,099
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	3,677,175
f. Change in actuarial accrued liability due to assumption, method, and plan changes	106,404
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	3,783,579
2. Actuarial accrued liability at December 31, 2016	3,801,272
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(17,693)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	3,514,763
b. Contributions for 2016[1]	(2,025)
c. Benefit payments and expenses during 2016	(178,575)
d. Interest at 7.50% to December 31, 2016	256,835
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	3,590,997
5. Actuarial value of assets at December 31, 2016	3,536,625
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(54,372)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($72,065)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$31,798**
2. Expected increase	54,380
3. Liability (gain)/loss	17,693
4. Asset (gain)/loss	54,372
5. Change due to changes in assumptions, methods, and plan provisions	106,404
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$264,647**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	33,319	215,832	15.44%	39,675	259,898	15.27%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	9,767	59,611	16.38%	9,175	58,489	15.69%
Total	**$43,086**	**$275,443**	**15.64%**	**$48,850**	**$318,387**	**15.34%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$264,647	$31,798
2. Next year's Tier 1/Tier 2 UAL payment	15,777	(375)
3. Combined valuation payroll	784,239	759,059
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	2.01%	(0.05%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.64%	15.34%
b. Tier 1/Tier 2 UAL rate	2.01%	(0.05%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	17.79%	15.44%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	10.69%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	10.69%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.14%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	93%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	7.69%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	13.69%
7. Advisory July 1, 2019 total pension rate, before adjustment	17.79%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(4.10%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	2.01%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(2.09%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	13.69%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	15.64%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	15.64%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	13.69%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.64%	15.34%
b. Tier 1/Tier 2 UAL rate	(2.09%)	(4.80%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	13.69%	10.69%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$215,832	$0	$215,832
Tier 2	59,611	0	59,611
Tier 1/Tier 2 valuation payroll	275,443	0	275,443
OPSRP valuation payroll	508,796	0	508,796
Combined valuation payroll	**$784,239**	**$0**	**$784,239**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	4	1	11	16	5	1	10	16
Police & Fire	0	0	0	0	0	0	0	0
Total	4	1	11	16	5	1	10	16
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	3	0	N/A	3	3	0	N/A	3
Total	3	0	N/A	3	3	0	N/A	3
Dormant Members								
General Service	3	0	0	3	3	0	0	3
Police & Fire	1	0	0	1	1	0	0	1
Total	4	0	0	4	4	0	0	4
Retired Members and Beneficiaries								
General Service	12	4	0	16	11	4	0	15
Police & Fire	7	0	0	7	7	0	0	7
Total	19	4	0	23	18	4	0	22
Grand Total Number of Members	**30**	**5**	**11**	**46**	**30**	**5**	**10**	**45**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49					1					1
50-54										
55-59					2					2
60-64				1						1
65-69					1					1
70-74										
75+										
Total	0	0	0	1	4	0	0	0	0	5

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59	2	1,515
60-64	2	423
65-69		
70-74		
75+		
Total	4	969

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	898
60-64	3	808
65-69	6	803
70-74	7	475
75-79	1	257
80-84	2	886
85-89	3	613
90-94		
95-99		
100+		
Total	23	667

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

City of Willamina/2189
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

Milliman

November 2017
City of Willamina/2189

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
City of Willamina/2189

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Willamina -- #2189

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for City of Willamina to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Willamina.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Willamina

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	15.67%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(10.16%)	(10.16%)	(10.16%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**7.07%**	**0.00%**	**4.62%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**7.56%**	**0.42%**	**5.04%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 135%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	5.50%	5.50%
Minimum 2019-2021 Rate	2.50%	0.00%
Maximum 2019-2021 Rate	8.50%	11.50%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$2,108,150	$1,299,674	($808,476)	162%	$315,834	(256%)
12/31/2012	2,290,038	1,461,888	(828,150)	157%	304,738	(272%)
12/31/2013	2,532,731	1,515,499	(1,017,232)	167%	267,216	(381%)
12/31/2014	2,632,412	1,775,684	(856,728)	148%	286,949	(299%)
12/31/2015	2,582,736	1,854,422	(728,314)	139%	319,766	(228%)
12/31/2016	2,615,517	1,942,906	(672,611)	135%	314,002	(214%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

City of Willamina

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	($672,611)	($728,314)
Allocated pooled OPSRP UAL	54,059	45,459
Side account	0	0
Net unfunded pension actuarial accrued liability	(618,552)	(682,855)
Combined valuation payroll	314,002	319,766
Net pension UAL as a percentage of payroll	(197%)	(214%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($43)	$1,553

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$12,023	$12,328
Tier 1/Tier 2 valuation payroll	107,688	112,428
Tier 1/Tier 2 pension normal cost rate	15.67%	16.47%
Tier 1/ Tier 2 Actuarial accrued liability	$1,942,906	$1,854,422
Actuarial asset value	2,615,517	2,582,736
Tier 1/Tier 2 Unfunded actuarial accrued liability	(672,611)	(728,314)
Tier 1/ Tier 2 Funded status	135%	139%
Combined valuation payroll	$314,002	$319,766
Tier 1/Tier 2 UAL as a percentage of payroll	(214%)	(228%)
Tier 1/Tier 2 UAL rate	(10.16%)	(10.97%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	2	3
Tier 1/Tier 2 dormant members	4	3
Tier 1/Tier 2 retirees and beneficiaries	16	15

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	314,002	319,766
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$143,442	$187,387
2. Employer reserves	1,924,668	1,886,453
3. Benefits in force reserve	547,407	508,896
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,615,517**	**$2,582,736**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$2,582,736
2.	Regular employer contributions	(12,443)
3.	Benefit payments and expenses	(107,180)
4.	Adjustments [1]	(27,427)
5.	Interest credited	179,831
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,615,517**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	12,023	12,328
Total	**$12,023**	**$12,328**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$11,807	$12,023	$216

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	11,586	207,825
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	447,605	386,222
▪ **Total Active Members**	**$459,191**	**$594,047**
Dormant Members	190,932	161,572
Retired Members and Beneficiaries	1,292,783	1,098,803
Total Actuarial Accrued Liability	**$1,942,906**	**$1,854,422**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,910,702	$1,942,906	$32,204

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,942,906	$1,854,422
2. Actuarial value of assets	2,615,517	2,582,736
3. Unfunded accrued liability *(1. – 2.)*	(672,611)	(728,314)
4. Funded percentage *(2. ÷ 1.)*	135%	139%
5. Combined valuation payroll	$314,002	$319,766
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(214%)	(228%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($1,016,448)	($79,033)	($73,076)	($1,010,491)	($80,083)
December 31, 2015	$288,134	$20,849	$20,777	$288,062	$21,079
December 31, 2016	N/A	N/A	N/A	$49,818	$3,517
Total				**($672,611)**	**($55,487)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,854,422
b. Normal cost at December 31, 2015 (excluding assumed expenses)	11,814
c. Benefit payments during 2016	(106,278)
d. Interest at 7.50% to December 31, 2016	135,539
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,895,497
f. Change in actuarial accrued liability due to assumption, method, and plan changes	32,204
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,927,701
2. Actuarial accrued liability at December 31, 2016	1,942,906
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(15,205)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	2,582,736
b. Contributions for 2016[1]	(12,443)
c. Benefit payments and expenses during 2016	(107,180)
d. Interest at 7.50% to December 31, 2016	189,219
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	2,652,332
5. Actuarial value of assets at December 31, 2016	2,615,517
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(36,816)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($52,021)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($728,314)**
2. Expected increase	(28,522)
3. Liability (gain)/loss	15,205
4. Asset (gain)/loss	36,816
5. Change due to changes in assumptions, methods, and plan provisions	32,204
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**($672,611)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	12,023	107,688	11.16%	12,328	112,428	10.97%
Total	**$12,023**	**$107,688**	**11.16%**	**$12,328**	**$112,428**	**10.97%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($672,611)	($728,314)
2. Next year's Tier 1/Tier 2 UAL payment	(55,487)	(58,184)
3. Combined valuation payroll	314,002	319,766
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(17.67%)	(18.20%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.16%	10.97%
b. Tier 1/Tier 2 UAL rate	(17.67%)	(18.20%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	(6.37%)	(7.08%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	5.50%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	5.50%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.10%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	135%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.50%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	1.00%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	10.00%
7. Advisory July 1, 2019 total pension rate, before adjustment	(6.37%)
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	7.37%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(17.67%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(10.30%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	1.00%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	4.51%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.16%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	15.67%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	5.51%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.67%	16.47%
b. Tier 1/Tier 2 UAL rate	(10.30%)	(11.12%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	5.51%	5.50%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	107,688	0	107,688
Tier 1/Tier 2 valuation payroll	107,688	0	107,688
OPSRP valuation payroll	206,314	0	206,314
Combined valuation payroll	**$314,002**	**$0**	**$314,002**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	2	6	8	1	2	5	8
Police & Fire	0	0	0	0	0	0	0	0
Total	0	2	6	8	1	2	5	8
Active Members with previous service segments with the employer								
General Service	1	2	N/A	3	2	2	N/A	4
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	2	N/A	3	2	2	N/A	4
Dormant Members								
General Service	2	2	0	4	1	2	0	3
Police & Fire	0	0	0	0	0	0	0	0
Total	2	2	0	4	1	2	0	3
Retired Members and Beneficiaries								
General Service	8	1	0	9	7	1	0	8
Police & Fire	7	0	0	7	7	0	0	7
Total	15	1	0	16	14	1	0	15
Grand Total Number of Members	**18**	**7**	**6**	**31**	**18**	**7**	**5**	**30**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34				1						**1**
35-39										
40-44										
45-49										
50-54					1					**1**
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**2**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	1	232
55-59		
60-64	2	502
65-69	1	65
70-74		
75+		
Total	4	326

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	4	352
60-64	4	301
65-69	3	996
70-74	3	540
75-79	1	436
80-84	1	168
85-89		
90-94		
95-99		
100+		
Total	16	489

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Clackamas County Housing Authority/2518
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Clackamas County Housing Authority/2518

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Clackamas County Housing Authority/2518

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Clackamas County Housing Authority -- #2518

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Clackamas County Housing Authority to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Clackamas County Housing Authority.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Clackamas County Housing Authority

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	15.52%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	8.24%	8.24%	8.24%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**25.32%**	**18.29%**	**23.02%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**25.81%**	**18.71%**	**23.44%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 75%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	19.80%	19.80%
Minimum 2019-2021 Rate	15.84%	11.88%
Maximum 2019-2021 Rate	23.76%	27.72%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$10,097,984	$12,671,485	$2,573,501	80%	$2,168,456	119%
12/31/2012	11,306,674	12,635,796	1,329,122	89%	2,138,503	62%
12/31/2013	12,525,314	13,459,586	934,272	93%	2,141,926	44%
12/31/2014	12,694,790	16,010,121	3,315,331	79%	2,040,650	162%
12/31/2015	12,441,069	16,500,427	4,059,358	75%	2,119,669	192%
12/31/2016	12,744,458	17,035,746	4,291,288	75%	2,299,496	187%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Clackamas County Housing Authority

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$4,291,288	$4,059,358
Allocated pooled OPSRP UAL	395,886	301,341
Side account	0	0
Net unfunded pension actuarial accrued liability	4,687,174	4,360,699
Combined valuation payroll	2,299,496	2,119,669
Net pension UAL as a percentage of payroll	204%	206%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($313)	$10,292

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$209,959	$200,036
Tier 1/Tier 2 valuation payroll	1,352,726	1,304,806
Tier 1/Tier 2 pension normal cost rate	15.52%	15.33%
Tier 1/ Tier 2 Actuarial accrued liability	$17,035,746	$16,500,427
Actuarial asset value	12,744,458	12,441,069
Tier 1/Tier 2 Unfunded actuarial accrued liability	4,291,288	4,059,358
Tier 1/ Tier 2 Funded status	75%	75%
Combined valuation payroll	$2,299,496	$2,119,669
Tier 1/Tier 2 UAL as a percentage of payroll	187%	192%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	8.24%	4.47%
Tier 1/Tier 2 active members [1]	22	23
Tier 1/Tier 2 dormant members	6	6
Tier 1/Tier 2 retirees and beneficiaries	46	48

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	2,299,496	2,119,669
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$1,549,966	$1,468,591
2. Employer reserves	6,936,944	6,226,070
3. Benefits in force reserve	4,257,548	4,746,408
4. Total market value of assets *(1. + 2. + 3.)*	**$12,744,458**	**$12,441,069**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$12,441,069
2.	Regular employer contributions	250,111
3.	Benefit payments and expenses	(833,607)
4.	Adjustments [1]	24,072
5.	Interest credited	862,813
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$12,744,458**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	87,889	84,118
Tier 2 Police & Fire	0	0
Tier 2 General Service	122,070	115,918
Total	**$209,959**	**$200,036**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$206,224	$209,959	$3,735

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	2,419,300	2,155,923
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	2,700,715	2,341,810
▪ **Total Active Members**	**$5,120,015**	**$4,497,733**
Dormant Members	1,860,894	1,754,290
Retired Members and Beneficiaries	10,054,837	10,248,404
Total Actuarial Accrued Liability	**$17,035,746**	**$16,500,427**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$16,737,733	$17,035,746	$298,013

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$17,035,746	$16,500,427
2. Actuarial value of assets	12,744,458	12,441,069
3. Unfunded accrued liability *(1. – 2.)*	4,291,288	4,059,358
4. Funded percentage *(2. ÷ 1.)*	75%	75%
5. Combined valuation payroll	$2,299,496	$2,119,669
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	187%	192%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$933,552	$72,588	$67,116	$928,080	$73,552
December 31, 2015	$3,125,806	$226,180	$225,399	$3,125,025	$228,672
December 31, 2016	N/A	N/A	N/A	$238,183	$16,817
Total				**$4,291,288**	**$319,041**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$16,500,427
b. Normal cost at December 31, 2015 (excluding assumed expenses)	190,777
c. Benefit payments during 2016	(826,597)
d. Interest at 7.50% to December 31, 2016	1,213,689
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	17,078,296
f. Change in actuarial accrued liability due to assumption, method, and plan changes	298,013
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	17,376,309
2. Actuarial accrued liability at December 31, 2016	17,035,746
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	340,563
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	12,441,069
b. Contributions for 2016[1]	250,111
c. Benefit payments and expenses during 2016	(833,607)
d. Interest at 7.50% to December 31, 2016	911,199
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	12,768,772
5. Actuarial value of assets at December 31, 2016	12,744,458
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(24,314)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$316,249**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$4,059,358**
2. Expected increase	250,166
3. Liability (gain)/loss	(340,563)
4. Asset (gain)/loss	24,314
5. Change due to changes in assumptions, methods, and plan provisions	298,013
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$4,291,288**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	87,889	451,798	19.45%	84,118	443,430	18.97%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	122,070	900,928	13.55%	115,918	861,376	13.46%
Total	**$209,959**	**$1,352,726**	**15.52%**	**$200,036**	**$1,304,806**	**15.33%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$4,291,288	$4,059,358
2. Next year's Tier 1/Tier 2 UAL payment	319,041	298,768
3. Combined valuation payroll	2,299,496	2,119,669
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	13.87%	14.10%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.52%	15.33%
b. Tier 1/Tier 2 UAL rate	13.87%	14.10%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	29.53%	29.58%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	19.80%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	19.80%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.96%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.96%
c. Funded percentage	75%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.96%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	15.84%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	23.76%
7. Advisory July 1, 2019 total pension rate, before adjustment	29.53%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(5.77%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	13.87%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	8.10%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	23.76%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	15.52%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	15.52%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	23.76%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.52%	15.33%
b. Tier 1/Tier 2 UAL rate	8.10%	4.32%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	23.76%	19.80%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$451,798	$0	$451,798
Tier 2	900,928	0	900,928
Tier 1/Tier 2 valuation payroll	1,352,726	0	1,352,726
OPSRP valuation payroll	946,770	0	946,770
Combined valuation payroll	**$2,299,496**	**$0**	**$2,299,496**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	8	14	16	38	8	15	16	39
Police & Fire	0	0	0	0	0	0	0	0
Total	8	14	16	38	8	15	16	39
Active Members with previous service segments with the employer								
General Service	2	6	N/A	8	2	5	N/A	7
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	2	6	N/A	8	2	5	N/A	7
Dormant Members								
General Service	6	0	6	12	6	0	5	11
Police & Fire	0	0	0	0	0	0	0	0
Total	6	0	6	12	6	0	5	11
Retired Members and Beneficiaries								
General Service	36	10	1	47	38	10	0	48
Police & Fire	0	0	0	0	0	0	0	0
Total	36	10	1	47	38	10	0	48
Grand Total Number of Members	**52**	**30**	**23**	**105**	**54**	**30**	**21**	**105**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39			1							**1**
40-44										
45-49			1	1						**2**
50-54				3	2	1				**6**
55-59			4	1		1				**6**
60-64				2			1			**3**
65-69			1		2	1				**4**
70-74										
75+										
Total	**0**	**0**	**7**	**7**	**4**	**3**	**1**	**0**	**0**	**22**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	2	896
50-54	2	2,875
55-59	1	2,920
60-64	1	3,172
65-69		
70-74		
75+		
Total	6	2,272

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	4	2,011
60-64	5	1,439
65-69	15	1,756
70-74	8	1,087
75-79	7	1,508
80-84	4	1,239
85-89		
90-94	2	665
95-99		
100+	1	369
Total	46	1,467

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Clackamas County/2001
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Clackamas County/2001

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Clackamas County -- #2001

November 2017

Secondary Employers

2045	Clackamas County Service District #1
2791	Clackamas County Fair

CONTENTS

Executive Summary

Milliman has prepared this report for Clackamas County to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Clackamas County.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Clackamas County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.41%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	9.15%	9.15%	9.15%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**27.12%**	**19.20%**	**23.93%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**27.61%**	**19.62%**	**24.35%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 70%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	21.30%	21.30%
Minimum 2019-2021 Rate	17.04%	12.78%
Maximum 2019-2021 Rate	25.56%	29.82%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$538,168,129	$693,798,252	$155,630,123	78%	$119,485,687	130%
12/31/2012	590,126,155	690,218,356	100,092,201	86%	123,609,884	81%
12/31/2013	647,928,769	720,844,889	72,916,120	90%	128,333,189	57%
12/31/2014	668,009,480	853,817,702	185,808,222	78%	131,578,857	141%
12/31/2015	652,139,641	890,605,763	238,466,122	73%	140,238,319	170%
12/31/2016	659,947,216	937,151,209	277,203,993	70%	144,073,998	192%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Clackamas County

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	$277,203,993	$238,466,122
Allocated pooled OPSRP UAL	24,804,095	19,936,832
Side account	0	0
Net unfunded pension actuarial accrued liability	302,008,088	258,402,954
Combined valuation payroll	144,073,998	140,238,319
Net pension UAL as a percentage of payroll	210%	184%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($19,617)	$680,949

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$10,874,703	$11,311,322
Tier 1/Tier 2 valuation payroll	66,288,406	69,810,094
Tier 1/Tier 2 pension normal cost rate	16.41%	16.20%
Tier 1/ Tier 2 Actuarial accrued liability	$937,151,209	$890,605,763
Actuarial asset value	659,947,216	652,139,641
Tier 1/Tier 2 Unfunded actuarial accrued liability	277,203,993	238,466,122
Tier 1/ Tier 2 Funded status	70%	73%
Combined valuation payroll	$144,073,998	$140,238,319
Tier 1/Tier 2 UAL as a percentage of payroll	192%	170%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	9.15%	5.10%
Tier 1/Tier 2 active members [1]	762	817
Tier 1/Tier 2 dormant members	550	531
Tier 1/Tier 2 retirees and beneficiaries	2,011	1,956

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) **RHIA**	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	144,073,998	140,238,319
3. Average Amortization factor	8.994	9.504
4. Total side account rate ***(-1. ÷ 2. ÷ 3.)*** [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$75,344,725	$80,378,783
2. Employer reserves	332,846,531	314,742,496
3. Benefits in force reserve	251,755,960	257,018,363
4. Total market value of assets *(1. + 2. + 3.)*	**$659,947,216**	**$652,139,641**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$652,139,641
2.	Regular employer contributions	15,649,334
3.	Benefit payments and expenses	(49,292,568)
4.	Adjustments [1]	(4,087,805)
5.	Interest credited	45,538,614
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)***	**$659,947,216**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$2,207,139	$2,327,914
Tier 1 General Service	3,373,619	3,853,036
Tier 2 Police & Fire	2,118,532	2,012,333
Tier 2 General Service	3,175,413	3,118,039
Total	**$10,874,703**	**$11,311,322**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$10,615,315	$10,874,703	$259,388

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$66,084,592	$68,631,049
▪ Tier 1 General Service	112,025,811	119,972,366
▪ Tier 2 Police & Fire	39,749,770	35,196,103
▪ Tier 2 General Service	70,310,451	65,471,474
▪ **Total Active Members**	**$288,170,624**	**$289,270,992**
Dormant Members	54,421,215	46,382,918
Retired Members and Beneficiaries	594,559,370	554,951,853
Total Actuarial Accrued Liability	**$937,151,209**	**$890,605,763**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$911,902,735	$937,151,209	$25,248,474

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$937,151,209	$890,605,763
2. Actuarial value of assets	659,947,216	652,139,641
3. Unfunded accrued liability *(1. – 2.)*	277,203,993	238,466,122
4. Funded percentage *(2. ÷ 1.)*	70%	73%
5. Combined valuation payroll	$144,073,998	$140,238,319
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	192%	170%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$72,859,871	$5,665,179	$5,238,160	$72,432,852	$5,740,438
December 31, 2015	$165,606,251	$11,983,086	$11,941,731	$165,564,896	$12,115,096
December 31, 2016	N/A	N/A	N/A	$39,206,245	$2,768,216
Total				**$277,203,993**	**$20,623,750**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$890,605,763
b. Normal cost at December 31, 2015 (excluding assumed expenses)	10,787,490
c. Benefit payments during 2016	(48,878,050)
d. Interest at 7.50% to December 31, 2016	65,367,036
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	917,882,239
f. Change in actuarial accrued liability due to assumption, method, and plan changes	25,248,474
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	943,130,713
2. Actuarial accrued liability at December 31, 2016	937,151,209
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	5,979,504
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	652,139,641
b. Contributions for 2016[1]	15,649,334
c. Benefit payments and expenses during 2016	(49,292,568)
d. Interest at 7.50% to December 31, 2016	47,648,852
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	666,145,259
5. Actuarial value of assets at December 31, 2016	659,947,216
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(6,198,043)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($218,539)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$238,466,122**
2. Expected increase	13,270,858
3. Liability (gain)/loss	(5,979,504)
4. Asset (gain)/loss	6,198,043
5. Change due to changes in assumptions, methods, and plan provisions	25,248,474
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$277,203,993**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$2,207,139	$9,855,673	22.39%	$2,327,914	$11,005,556	21.15%
Tier 1 General Service	3,373,619	20,340,253	16.59%	3,853,036	23,133,149	16.66%
Tier 2 Police & Fire	2,118,532	10,619,105	19.95%	2,012,333	10,562,307	19.05%
Tier 2 General Service	3,175,413	25,473,375	12.47%	3,118,039	25,109,082	12.42%
Total	**$10,874,703**	**$66,288,406**	**16.41%**	**$11,311,322**	**$69,810,094**	**16.20%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$277,203,993	$238,466,122
2. Next year's Tier 1/Tier 2 UAL payment	20,623,750	17,648,265
3. Combined valuation payroll	144,073,998	140,238,319
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	14.31%	12.58%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.41%	16.20%
b. Tier 1/Tier 2 UAL rate	14.31%	12.58%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	30.86%	28.93%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	21.30%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	21.30%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	4.26%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.26%
c. Funded percentage	70%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.26%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	17.04%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	25.56%
7. Advisory July 1, 2019 total pension rate, before adjustment	30.86%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(5.30%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	14.31%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	9.01%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	25.56%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.41%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.41%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	25.56%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.41%	16.20%
b. Tier 1/Tier 2 UAL rate	9.01%	4.95%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	25.56%	21.30%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$20,340,253	$9,855,673	$30,195,926
Tier 2	25,473,375	10,619,105	36,092,480
Tier 1/Tier 2 valuation payroll	45,813,628	20,474,778	66,288,406
OPSRP valuation payroll	59,665,661	18,119,931	77,785,592
Combined valuation payroll	**$105,479,289**	**$38,594,709**	**$144,073,998**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	250	328	1,019	1,597	285	338	919	1,542
Police & Fire	85	99	204	388	94	100	200	394
Total	335	427	1,223	1,985	379	438	1,119	1,936
Active Members with previous service segments with the employer								
General Service	194	184	N/A	378	202	178	N/A	380
Police & Fire	29	36	N/A	65	31	35	N/A	66
Total	223	220	N/A	443	233	213	N/A	446
Dormant Members								
General Service	251	249	182	682	247	235	145	627
Police & Fire	25	25	16	66	24	25	9	58
Total	276	274	198	748	271	260	154	685
Retired Members and Beneficiaries								
General Service	1,493	172	35	1,700	1,449	167	28	1,644
Police & Fire	332	14	3	349	318	22	4	344
Total	1,825	186	38	2,049	1,767	189	32	1,988
Grand Total Number of Members	**2,659**	**1,107**	**1,459**	**5,225**	**2,650**	**1,100**	**1,305**	**5,055**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34			2							**2**
35-39		1	20	23						**44**
40-44		3	28	69	14					**114**
45-49		5	19	60	61	10				**155**
50-54			19	60	49	29	4			**161**
55-59		3	20	41	33	23	7	2		**129**
60-64		1	7	39	33	20	10	2		**112**
65-69	1	1	3	14	7	9	3			**38**
70-74					3	2				**5**
75+				1	1					**2**
Total	**1**	**14**	**118**	**307**	**201**	**93**	**24**	**4**	**0**	**762**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29	1	113
30-34	5	319
35-39	26	262
40-44	49	845
45-49	105	1,045
50-54	85	1,083
55-59	101	1,028
60-64	83	925
65-69	57	710
70-74	26	479
75+	12	411
Total	550	891

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	4	596
45-49	7	2,511
50-54	39	2,248
55-59	115	2,285
60-64	359	2,000
65-69	561	2,015
70-74	456	2,009
75-79	235	1,715
80-84	126	1,445
85-89	72	1,288
90-94	27	1,390
95-99	8	501
100+	2	317
Total	2,011	1,917

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Clackamas River Water Providers/2870
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System (“PERS” or “the System”) as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Clackamas River Water Providers/2870

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Clackamas River Water Providers/2870

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Clackamas River Water Providers -- #2870

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Clackamas River Water Providers to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Clackamas River Water Providers.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Clackamas River Water Providers

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	8.55%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	2.19%	2.19%	2.19%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**12.30%**	**12.24%**	**16.97%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**12.79%**	**12.66%**	**17.39%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 42%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	9.90%	9.90%
Minimum 2019-2021 Rate	6.90%	3.90%
Maximum 2019-2021 Rate	12.90%	15.90%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$5,724	$6,294	$570	91%	$137,485	0%
12/31/2012	10,532	18,085	7,553	58%	144,904	5%
12/31/2013	15,764	25,646	9,882	61%	147,680	7%
12/31/2014	19,485	39,425	19,940	49%	144,239	14%
12/31/2015	24,106	51,168	27,062	47%	150,995	18%
12/31/2016	33,231	79,043	45,812	42%	164,048	28%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Clackamas River Water Providers

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$45,812	$27,062
Allocated pooled OPSRP UAL	28,243	21,466
Side account	0	0
Net unfunded pension actuarial accrued liability	74,055	48,528
Combined valuation payroll	164,048	150,995
Net pension UAL as a percentage of payroll	45%	32%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($22)	$733

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$7,610	$6,774
Tier 1/Tier 2 valuation payroll	89,055	80,457
Tier 1/Tier 2 pension normal cost rate	8.55%	8.42%
Tier 1/ Tier 2 Actuarial accrued liability	$79,043	$51,168
Actuarial asset value	33,231	24,106
Tier 1/Tier 2 Unfunded actuarial accrued liability	45,812	27,062
Tier 1/ Tier 2 Funded status	42%	47%
Combined valuation payroll	$164,048	$150,995
Tier 1/Tier 2 UAL as a percentage of payroll	28%	18%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	2.19%	1.48%
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) **RHIA**	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	164,048	150,995
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	33,231	24,106
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$33,231**	**$24,106**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$24,106
2. Regular employer contributions	7,098
3. Benefit payments and expenses	0
4. Adjustments [1]	(215)
5. Interest credited	2,242
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$33,231**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	7,610	6,774
Total	**$7,610**	**$6,774**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$7,441	$7,610	$169

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	79,043	51,168
▪ **Total Active Members**	**$79,043**	**$51,168**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$79,043**	**$51,168**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$67,952	$79,043	$11,091

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$79,043	$51,168
2. Actuarial value of assets	33,231	24,106
3. Unfunded accrued liability *(1. – 2.)*	45,812	27,062
4. Funded percentage *(2. ÷ 1.)*	42%	47%
5. Combined valuation payroll	$164,048	$150,995
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	28%	18%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$9,874	$768	$710	$9,816	$778
December 31, 2015	$17,188	$1,244	$1,239	$17,183	$1,257
December 31, 2016	N/A	N/A	N/A	$18,813	$1,328
Total				**$45,812**	**$3,363**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$51,168
b. Normal cost at December 31, 2015 (excluding assumed expenses)	6,461
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	4,080
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	61,709
f. Change in actuarial accrued liability due to assumption, method, and plan changes	11,091
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	72,800
2. Actuarial accrued liability at December 31, 2016	79,043
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(6,243)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	24,106
b. Contributions for 2016[1]	7,098
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	2,074
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	33,278
5. Actuarial value of assets at December 31, 2016	33,231
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(47)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($6,290)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$27,062**
2. Expected increase	1,369
3. Liability (gain)/loss	6,243
4. Asset (gain)/loss	47
5. Change due to changes in assumptions, methods, and plan provisions	11,091
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$45,812**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	7,610	89,055	8.55%	6,774	80,457	8.42%
Total	**$7,610**	**$89,055**	**8.55%**	**$6,774**	**$80,457**	**8.42%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$45,812	$27,062
2. Next year's Tier 1/Tier 2 UAL payment	3,363	2,012
3. Combined valuation payroll	164,048	150,995
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	2.05%	1.33%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	8.55%	8.42%
b. Tier 1/Tier 2 UAL rate	2.05%	1.33%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	10.74%	9.90%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	9.90%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	9.90%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.98%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	42%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	3.90%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	15.90%
7. Advisory July 1, 2019 total pension rate, before adjustment	10.74%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	2.05%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	2.05%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	10.74%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	8.55%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	8.55%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	10.74%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	8.55%	8.42%
b. Tier 1/Tier 2 UAL rate	2.05%	1.33%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	10.74%	9.90%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	89,055	0	89,055
Tier 1/Tier 2 valuation payroll	89,055	0	89,055
OPSRP valuation payroll	74,993	0	74,993
Combined valuation payroll	**$164,048**	**$0**	**$164,048**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	1	2	0	1	1	2
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	1	2	0	1	1	2
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**0**	**1**	**1**	**2**	**0**	**1**	**1**	**2**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49				1						**1**
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Columbia River Public Utility District/2679
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Columbia River Public Utility District/2679

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA	Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary	Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Columbia River Public Utility District -- #2679

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Columbia River Public Utility District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Columbia River Public Utility District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Columbia River Public Utility District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	12.66%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	6.92%	6.92%	6.92%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**21.14%**	**16.97%**	**21.70%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**21.63%**	**17.39%**	**22.12%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 67%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	15.54%	15.54%
Minimum 2019-2021 Rate	12.43%	9.32%
Maximum 2019-2021 Rate	18.65%	21.76%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$11,614,143	$13,958,378	$2,344,235	83%	$4,487,797	52%
12/31/2012	12,840,692	14,267,091	1,426,399	90%	4,454,644	32%
12/31/2013	14,273,050	15,360,117	1,087,067	93%	4,038,840	27%
12/31/2014	14,633,041	18,631,347	3,998,306	79%	4,065,031	98%
12/31/2015	14,549,491	20,145,336	5,595,845	72%	3,838,488	146%
12/31/2016	14,784,008	21,939,317	7,155,309	67%	4,047,840	177%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Columbia River Public Utility District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$7,155,309	$5,595,845
Allocated pooled OPSRP UAL	696,885	545,695
Side account	0	0
Net unfunded pension actuarial accrued liability	7,852,194	6,141,540
Combined valuation payroll	4,047,840	3,838,488
Net pension UAL as a percentage of payroll	194%	160%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($551)	$18,638

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$244,372	$235,832
Tier 1/Tier 2 valuation payroll	1,930,638	1,811,277
Tier 1/Tier 2 pension normal cost rate	12.66%	13.02%
Tier 1/ Tier 2 Actuarial accrued liability	$21,939,317	$20,145,336
Actuarial asset value	14,784,008	14,549,491
Tier 1/Tier 2 Unfunded actuarial accrued liability	7,155,309	5,595,845
Tier 1/ Tier 2 Funded status	67%	72%
Combined valuation payroll	$4,047,840	$3,838,488
Tier 1/Tier 2 UAL as a percentage of payroll	177%	146%
Tier 1/Tier 2 UAL rate	6.92%	2.52%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	18	19
Tier 1/Tier 2 dormant members	15	16
Tier 1/Tier 2 retirees and beneficiaries	22	21

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	4,047,840	3,838,488
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$2,374,094	$2,428,152
2. Employer reserves	7,705,638	7,714,610
3. Benefits in force reserve	4,704,276	4,406,729
4. Total market value of assets ***(1. + 2. + 3.)***	**$14,784,008**	**$14,549,491**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$14,549,491
2.	Regular employer contributions	280,171
3.	Benefit payments and expenses	(921,074)
4.	Adjustments [1]	(163,569)
5.	Interest credited	1,038,988
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$14,784,008**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	119,333	109,186
Tier 2 Police & Fire	0	0
Tier 2 General Service	125,039	126,646
Total	**$244,372**	**$235,832**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$240,572	$244,372	$3,800

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	4,221,774	3,375,150
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	2,940,350	2,662,085
▪ **Total Active Members**	**$7,162,124**	**$6,037,235**
Dormant Members	3,667,343	4,593,129
Retired Members and Beneficiaries	11,109,850	9,514,972
Total Actuarial Accrued Liability	**$21,939,317**	**$20,145,336**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$21,396,107	$21,939,317	$543,210

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$21,939,317	$20,145,336
2. Actuarial value of assets	14,784,008	14,549,491
3. Unfunded accrued liability *(1. – 2.)*	7,155,309	5,595,845
4. Funded percentage *(2. ÷ 1.)*	67%	72%
5. Combined valuation payroll	$4,047,840	$3,838,488
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	177%	146%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$1,086,228	$84,459	$78,093	$1,079,862	$85,581
December 31, 2015	$4,509,617	$326,311	$325,185	$4,508,491	$329,906
December 31, 2016	N/A	N/A	N/A	$1,566,956	$110,637
Total				**$7,155,309**	**$526,124**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$20,145,336
b. Normal cost at December 31, 2015 (excluding assumed expenses)	224,904
c. Benefit payments during 2016	(913,328)
d. Interest at 7.50% to December 31, 2016	1,485,084
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	20,941,996
f. Change in actuarial accrued liability due to assumption, method, and plan changes	543,210
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	21,485,206
2. Actuarial accrued liability at December 31, 2016	21,939,317
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(454,111)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	14,549,491
b. Contributions for 2016[1]	280,171
c. Benefit payments and expenses during 2016	(921,074)
d. Interest at 7.50% to December 31, 2016	1,067,178
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	14,975,767
5. Actuarial value of assets at December 31, 2016	14,784,008
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(191,759)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($645,870)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$5,595,845**
2. Expected increase	370,384
3. Liability (gain)/loss	454,111
4. Asset (gain)/loss	191,759
5. Change due to changes in assumptions, methods, and plan provisions	543,210
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$7,155,309**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	119,333	834,141	14.31%	109,186	684,659	15.95%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	125,039	1,096,497	11.40%	126,646	1,126,618	11.24%
Total	**$244,372**	**$1,930,638**	**12.66%**	**$235,832**	**$1,811,277**	**13.02%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$7,155,309	$5,595,845
2. Next year's Tier 1/Tier 2 UAL payment	526,124	410,770
3. Combined valuation payroll	4,047,840	3,838,488
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	13.00%	10.70%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.66%	13.02%
b. Tier 1/Tier 2 UAL rate	13.00%	10.70%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	25.80%	23.87%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	15.54%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	15.54%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.11%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.11%
c. Funded percentage	67%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.04%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	11.50%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	19.58%
7. Advisory July 1, 2019 total pension rate, before adjustment	25.80%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(6.22%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	13.00%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	6.78%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	19.58%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	12.66%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	12.66%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	19.58%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.66%	13.02%
b. Tier 1/Tier 2 UAL rate	6.78%	2.37%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	19.58%	15.54%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$834,141	$0	$834,141
Tier 2	1,096,497	0	1,096,497
Tier 1/Tier 2 valuation payroll	1,930,638	0	1,930,638
OPSRP valuation payroll	2,117,202	0	2,117,202
Combined valuation payroll	**$4,047,840**	**$0**	**$4,047,840**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	7	11	24	42	7	12	23	42
Police & Fire	0	0	0	0	0	0	0	0
Total	7	11	24	42	7	12	23	42
Active Members with previous service segments with the employer								
General Service	0	4	N/A	4	0	3	N/A	3
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	4	N/A	4	0	3	N/A	3
Dormant Members								
General Service	7	8	3	18	8	8	3	19
Police & Fire	0	0	0	0	0	0	0	0
Total	7	8	3	18	8	8	3	19
Retired Members and Beneficiaries								
General Service	21	1	0	22	20	1	0	21
Police & Fire	0	0	0	0	0	0	0	0
Total	21	1	0	22	20	1	0	21
Grand Total Number of Members	**35**	**24**	**27**	**86**	**35**	**24**	**26**	**85**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44			1		1					2
45-49			1	3		1				5
50-54		1		3		1				5
55-59					2	1	1			4
60-64			1	1						2
65-69										
70-74										
75+										
Total	0	1	3	7	3	3	1	0	0	18

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	963
45-49	5	1,374
50-54	3	1,684
55-59	3	1,850
60-64	3	3,355
65-69		
70-74		
75+		
Total	15	1,900

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	3,283
60-64	10	3,585
65-69	3	2,413
70-74	6	2,787
75-79	1	169
80-84	1	280
85-89		
90-94		
95-99		
100+		
Total	22	2,888

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Curry County/2002
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

Milliman

November 2017
Curry County/2002

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Curry County/2002

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Curry County -- #2002

November 2017

Secondary Employers

2034 Curry County General Hospital

CONTENTS

Executive Summary

Milliman has prepared this report for Curry County to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Curry County.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Curry County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	18.99%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	5.56%	5.56%	5.56%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**26.11%**	**15.61%**	**20.34%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**26.60%**	**16.03%**	**20.76%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 70%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	20.46%	20.46%
Minimum 2019-2021 Rate	16.37%	12.28%
Maximum 2019-2021 Rate	24.55%	28.64%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$43,857,781	$53,518,685	$9,660,904	82%	$6,452,202	150%
12/31/2012	47,011,256	51,970,582	4,959,326	90%	5,808,820	85%
12/31/2013	50,448,321	53,837,333	3,389,012	94%	4,485,910	76%
12/31/2014	50,398,447	61,802,543	11,404,096	82%	4,297,190	265%
12/31/2015	47,469,556	63,349,580	15,880,024	75%	4,665,540	340%
12/31/2016	46,632,559	66,690,980	20,058,421	70%	4,657,076	431%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Curry County

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$20,058,421	$15,880,024
Allocated pooled OPSRP UAL	801,772	663,272
Side account	0	0
Net unfunded pension actuarial accrued liability	20,860,193	16,543,296
Combined valuation payroll	4,657,076	4,665,540
Net pension UAL as a percentage of payroll	448%	355%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($634)	$22,654

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$367,732	$391,416
Tier 1/Tier 2 valuation payroll	1,936,601	2,063,882
Tier 1/Tier 2 pension normal cost rate	18.99%	18.97%
Tier 1/ Tier 2 Actuarial accrued liability	$66,690,980	$63,349,580
Actuarial asset value	46,632,559	47,469,556
Tier 1/Tier 2 Unfunded actuarial accrued liability	20,058,421	15,880,024
Tier 1/ Tier 2 Funded status	70%	75%
Combined valuation payroll	$4,657,076	$4,665,540
Tier 1/Tier 2 UAL as a percentage of payroll	431%	340%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	5.56%	1.49%
Tier 1/Tier 2 active members [1]	35	38
Tier 1/Tier 2 dormant members	81	81
Tier 1/Tier 2 retirees and beneficiaries	302	296

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	4,657,076	4,665,540
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$5,086,736	$6,423,946
2. Employer reserves	20,802,809	21,049,080
3. Benefits in force reserve	20,743,014	19,996,530
4. Total market value of assets ***(1. + 2. + 3.)***	**$46,632,559**	**$47,469,556**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$47,469,556
2. Regular employer contributions	354,551
3. Benefit payments and expenses	(4,061,379)
4. Adjustments [1]	(408,623)
5. Interest credited	3,278,455
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$46,632,559**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$53,502	$126,039
Tier 1 General Service	131,431	122,646
Tier 2 Police & Fire	63,403	63,182
Tier 2 General Service	119,396	79,549
Total	**$367,732**	**$391,416**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$361,343	$367,732	$6,389

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$1,543,713	$3,348,005
▪ Tier 1 General Service	5,920,965	6,135,026
▪ Tier 2 Police & Fire	1,767,498	1,880,821
▪ Tier 2 General Service	2,385,895	2,179,724
▪ **Total Active Members**	**$11,618,071**	**$13,543,576**
Dormant Members	6,085,178	6,629,667
Retired Members and Beneficiaries	48,987,731	43,176,337
Total Actuarial Accrued Liability	**$66,690,980**	**$63,349,580**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$65,287,854	$66,690,980	$1,403,126

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$66,690,980	$63,349,580
2. Actuarial value of assets	46,632,559	47,469,556
3. Unfunded accrued liability *(1. – 2.)*	20,058,421	15,880,024
4. Funded percentage *(2. ÷ 1.)*	70%	75%
5. Combined valuation payroll	$4,657,076	$4,665,540
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	431%	340%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$3,386,398	$263,308	$243,460	$3,366,550	$266,805
December 31, 2015	$12,493,626	$904,025	$900,905	$12,490,506	$913,984
December 31, 2016	N/A	N/A	N/A	$4,201,365	$296,644
Total				**$20,058,421**	**$1,477,433**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$63,349,580
b. Normal cost at December 31, 2015 (excluding assumed expenses)	373,300
c. Benefit payments during 2016	(4,027,226)
d. Interest at 7.50% to December 31, 2016	4,614,196
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	64,309,850
f. Change in actuarial accrued liability due to assumption, method, and plan changes	1,403,126
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	65,712,976
2. Actuarial accrued liability at December 31, 2016	66,690,980
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(978,004)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	47,469,556
b. Contributions for 2016[1]	354,551
c. Benefit payments and expenses during 2016	(4,061,379)
d. Interest at 7.50% to December 31, 2016	3,421,211
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	47,183,938
5. Actuarial value of assets at December 31, 2016	46,632,559
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(551,379)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($1,529,383)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$15,880,024**
2. Expected increase	1,245,888
3. Liability (gain)/loss	978,004
4. Asset (gain)/loss	551,379
5. Change due to changes in assumptions, methods, and plan provisions	1,403,126
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$20,058,421**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$53,502	$215,680	24.81%	$126,039	$547,496	23.02%
Tier 1 General Service	131,431	622,932	21.10%	122,646	561,321	21.85%
Tier 2 Police & Fire	63,403	323,699	19.59%	63,182	325,289	19.42%
Tier 2 General Service	119,396	774,290	15.42%	79,549	629,776	12.63%
Total	**$367,732**	**$1,936,601**	**18.99%**	**$391,416**	**$2,063,882**	**18.97%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$20,058,421	$15,880,024
2. Next year's Tier 1/Tier 2 UAL payment	1,477,433	1,167,333
3. Combined valuation payroll	4,657,076	4,665,540
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	31.72%	25.02%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.99%	18.97%
b. Tier 1/Tier 2 UAL rate	31.72%	25.02%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	50.85%	44.14%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	20.46%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	20.46%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	4.09%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.09%
c. Funded percentage	70%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.09%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	16.37%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	24.55%
7. Advisory July 1, 2019 total pension rate, before adjustment	50.85%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(26.30%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	31.72%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	5.42%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	24.55%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	18.99%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	18.99%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	24.55%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.99%	18.97%
b. Tier 1/Tier 2 UAL rate	5.42%	1.34%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	24.55%	20.46%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$622,932	$215,680	$838,612
Tier 2	774,290	323,699	1,097,989
Tier 1/Tier 2 valuation payroll	1,397,222	539,379	1,936,601
OPSRP valuation payroll	1,763,055	957,420	2,720,475
Combined valuation payroll	**$3,160,277**	**$1,496,799**	**$4,657,076**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	12	15	40	67	11	13	37	61
Police & Fire	3	5	20	28	8	6	19	33
Total	15	20	60	95	19	19	56	94
Active Members with previous service segments with the employer								
General Service	22	9	N/A	31	24	11	N/A	35
Police & Fire	5	10	N/A	15	6	10	N/A	16
Total	27	19	N/A	46	30	21	N/A	51
Dormant Members								
General Service	25	44	24	93	28	45	22	95
Police & Fire	7	5	6	18	4	4	5	13
Total	32	49	30	111	32	49	27	108
Retired Members and Beneficiaries								
General Service	212	26	10	248	209	26	9	244
Police & Fire	59	5	0	64	56	5	0	61
Total	271	31	10	312	265	31	9	305
Grand Total Number of Members	**345**	**119**	**100**	**564**	**346**	**120**	**92**	**558**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44		1		1	1					**3**
45-49			1	1	3					**5**
50-54			2	4	2	1				**9**
55-59		1	2	2		2	1			**8**
60-64			2	3		3	1			**9**
65-69				1						**1**
70-74										
75+										
Total	**0**	**2**	**7**	**12**	**6**	**6**	**2**	**0**	**0**	**35**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	1	4
40-44	3	70
45-49	13	842
50-54	6	346
55-59	19	965
60-64	16	492
65-69	16	518
70-74	2	127
75+	5	769
Total	81	640

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49	3	1,456
50-54	4	721
55-59	21	1,141
60-64	36	1,839
65-69	64	1,146
70-74	67	1,055
75-79	48	1,037
80-84	32	417
85-89	20	446
90-94	5	766
95-99	2	96
100+		
Total	302	1,051

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Deschutes Public Library District/2828
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Deschutes Public Library District/2828

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Deschutes Public Library District/2828

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Deschutes Public Library District -- #2828

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Deschutes Public Library District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Deschutes Public Library District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Deschutes Public Library District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.67%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	4.81%	4.81%	4.81%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**20.04%**	**14.86%**	**19.59%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**20.53%**	**15.28%**	**20.01%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 68%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	14.88%	14.88%
Minimum 2019-2021 Rate	11.88%	8.88%
Maximum 2019-2021 Rate	17.88%	20.88%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$4,460,613	$5,277,704	$817,091	85%	$3,653,084	22%
12/31/2012	5,162,441	6,430,787	1,268,346	80%	3,859,982	33%
12/31/2013	6,052,870	6,757,931	705,061	90%	3,987,553	18%
12/31/2014	6,469,449	8,193,622	1,724,173	79%	3,992,085	43%
12/31/2015	6,485,989	8,982,090	2,496,101	72%	4,230,537	59%
12/31/2016	6,888,303	10,071,718	3,183,415	68%	4,450,827	72%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Deschutes Public Library District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$3,183,415	$2,496,101
Allocated pooled OPSRP UAL	766,264	601,430
Side account	0	0
Net unfunded pension actuarial accrued liability	3,949,679	3,097,531
Combined valuation payroll	4,450,827	4,230,537
Net pension UAL as a percentage of payroll	89%	73%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($606)	$20,542

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$287,118	$290,534
Tier 1/Tier 2 valuation payroll	2,100,180	2,164,767
Tier 1/Tier 2 pension normal cost rate	13.67%	13.42%
Tier 1/ Tier 2 Actuarial accrued liability	$10,071,718	$8,982,090
Actuarial asset value	6,888,303	6,485,989
Tier 1/Tier 2 Unfunded actuarial accrued liability	3,183,415	2,496,101
Tier 1/ Tier 2 Funded status	68%	72%
Combined valuation payroll	$4,450,827	$4,230,537
Tier 1/Tier 2 UAL as a percentage of payroll	72%	59%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	4.81%	1.46%
Tier 1/Tier 2 active members [1]	37	38
Tier 1/Tier 2 dormant members	18	17
Tier 1/Tier 2 retirees and beneficiaries	31	28

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	4,450,827	4,230,537
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$773,272	$770,444
2. Employer reserves	4,871,119	4,508,294
3. Benefits in force reserve	1,243,912	1,207,251
4. Total market value of assets ***(1. + 2. + 3.)***	**$6,888,303**	**$6,485,989**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$6,485,989
2.	Regular employer contributions	276,428
3.	Benefit payments and expenses	(243,552)
4.	Adjustments [1]	(105,006)
5.	Interest credited	474,444
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$6,888,303**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	61,848	62,235
Tier 2 Police & Fire	0	0
Tier 2 General Service	225,270	228,299
Total	**$287,118**	**$290,534**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$279,962	$287,118	$7,156

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	1,358,295	1,112,469
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	4,894,019	4,763,129
▪ **Total Active Members**	**$6,252,314**	**$5,875,598**
Dormant Members	881,719	499,805
Retired Members and Beneficiaries	2,937,685	2,606,687
Total Actuarial Accrued Liability	**$10,071,718**	**$8,982,090**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$9,733,784	$10,071,718	$337,934

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$10,071,718	$8,982,090
2. Actuarial value of assets	6,888,303	6,485,989
3. Unfunded accrued liability *(1. – 2.)*	3,183,415	2,496,101
4. Funded percentage *(2. ÷ 1.)*	68%	72%
5. Combined valuation payroll	$4,450,827	$4,230,537
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	72%	59%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$704,518	$54,779	$50,650	$700,389	$55,507
December 31, 2015	$1,791,583	$129,637	$129,190	$1,791,136	$131,065
December 31, 2016	N/A	N/A	N/A	$691,890	$48,852
Total				**$3,183,415**	**$235,424**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$8,982,090
b. Normal cost at December 31, 2015 (excluding assumed expenses)	277,230
c. Benefit payments during 2016	(241,504)
d. Interest at 7.50% to December 31, 2016	674,996
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	9,692,812
f. Change in actuarial accrued liability due to assumption, method, and plan changes	337,934
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	10,030,746
2. Actuarial accrued liability at December 31, 2016	10,071,718
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(40,972)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	6,485,989
b. Contributions for 2016[1]	276,428
c. Benefit payments and expenses during 2016	(243,552)
d. Interest at 7.50% to December 31, 2016	487,682
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	7,006,548
5. Actuarial value of assets at December 31, 2016	6,888,303
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(118,244)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($159,216)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$2,496,101**
2. Expected increase	190,164
3. Liability (gain)/loss	40,972
4. Asset (gain)/loss	118,244
5. Change due to changes in assumptions, methods, and plan provisions	337,934
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$3,183,415**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	61,848	379,090	16.31%	62,235	381,916	16.30%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	225,270	1,721,090	13.09%	228,299	1,782,851	12.81%
Total	**$287,118**	**$2,100,180**	**13.67%**	**$290,534**	**$2,164,767**	**13.42%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	\$3,183,415	\$2,496,101
2. Next year's Tier 1/Tier 2 UAL payment	235,424	184,416
3. Combined valuation payroll	4,450,827	4,230,537
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	5.29%	4.36%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.67%	13.42%
b. Tier 1/Tier 2 UAL rate	5.29%	4.36%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	19.10%	17.93%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	14.88%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	14.88%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.98%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	68%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.60%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	11.28%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	18.48%
7. Advisory July 1, 2019 total pension rate, before adjustment	19.10%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.62%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	5.29%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	4.67%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	18.48%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.67%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.67%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	18.48%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.67%	13.42%
b. Tier 1/Tier 2 UAL rate	4.67%	1.31%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	18.48%	14.88%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$379,090	$0	$379,090
Tier 2	1,721,090	0	1,721,090
Tier 1/Tier 2 valuation payroll	2,100,180	0	2,100,180
OPSRP valuation payroll	2,328,655	21,992	2,350,647
Combined valuation payroll	**$4,428,835**	**$21,992**	**$4,450,827**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	9	28	58	95	9	29	54	92
Police & Fire	0	0	1	1	0	0	0	0
Total	9	28	59	96	9	29	54	92
Active Members with previous service segments with the employer								
General Service	2	6	N/A	8	2	9	N/A	11
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	2	6	N/A	8	2	9	N/A	11
Dormant Members								
General Service	3	15	7	25	3	14	5	22
Police & Fire	0	0	0	0	0	0	0	0
Total	3	15	7	25	3	14	5	22
Retired Members and Beneficiaries								
General Service	20	11	2	33	20	8	1	29
Police & Fire	0	0	0	0	0	0	0	0
Total	20	11	2	33	20	8	1	29
Grand Total Number of Members	**34**	**60**	**68**	**162**	**34**	**60**	**60**	**154**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44				2						**2**
45-49			1	4						**5**
50-54			4	4	2					**10**
55-59			2	6		1				**9**
60-64			2	4			1			**7**
65-69				1	1	1				**3**
70-74				1						**1**
75+										
Total	**0**	**0**	**9**	**22**	**3**	**2**	**1**	**0**	**0**	**37**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	1	440
40-44	1	1
45-49		
50-54	3	784
55-59	5	682
60-64	4	181
65-69	3	352
70-74		
75+	1	113
Total	18	450

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	1,397
60-64	6	412
65-69	12	558
70-74	8	891
75-79	4	436
80-84		
85-89		
90-94		
95-99		
100+		
Total	31	627

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members’ regular account balances. 7.20% compounded annually on members’ variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Deschutes Valley Water District/2527
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Deschutes Valley Water District/2527

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Deschutes Valley Water District -- #2527

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Deschutes Valley Water District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Deschutes Valley Water District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Deschutes Valley Water District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	14.16%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	12.97%	12.97%	12.97%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**28.69%**	**23.02%**	**27.75%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**29.18%**	**23.44%**	**28.17%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 70%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	22.61%	22.61%
Minimum 2019-2021 Rate	18.09%	13.57%
Maximum 2019-2021 Rate	27.13%	31.65%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$7,556,537	$10,044,617	$2,488,080	75%	$1,753,293	142%
12/31/2012	8,072,355	9,748,713	1,676,358	83%	1,729,841	97%
12/31/2013	9,062,256	10,335,094	1,272,838	88%	1,771,241	72%
12/31/2014	9,356,834	12,194,300	2,837,466	77%	1,697,650	167%
12/31/2015	8,920,468	13,131,220	4,210,752	68%	1,560,891	270%
12/31/2016	9,527,972	13,528,995	4,001,023	70%	1,461,471	274%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Deschutes Valley Water District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$4,001,023	$4,210,752
Allocated pooled OPSRP UAL	251,610	221,902
Side account	0	0
Net unfunded pension actuarial accrued liability	4,252,633	4,432,654
Combined valuation payroll	1,461,471	1,560,891
Net pension UAL as a percentage of payroll	291%	284%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($199)	$7,579

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$149,338	$168,356
Tier 1/Tier 2 valuation payroll	1,054,420	1,191,614
Tier 1/Tier 2 pension normal cost rate	14.16%	14.13%
Tier 1/ Tier 2 Actuarial accrued liability	$13,528,995	$13,131,220
Actuarial asset value	9,527,972	8,920,468
Tier 1/Tier 2 Unfunded actuarial accrued liability	4,001,023	4,210,752
Tier 1/ Tier 2 Funded status	70%	68%
Combined valuation payroll	$1,461,471	$1,560,891
Tier 1/Tier 2 UAL as a percentage of payroll	274%	270%
Tier 1/Tier 2 UAL rate	12.97%	8.48%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	12	14
Tier 1/Tier 2 dormant members	3	2
Tier 1/Tier 2 retirees and beneficiaries	18	17

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,461,471	1,560,891
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$1,718,798	$1,401,879
2. Employer reserves	4,295,539	3,792,782
3. Benefits in force reserve	3,513,635	3,725,807
4. Total market value of assets ***(1. + 2. + 3.)***	**$9,527,972**	**$8,920,468**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$8,920,468
2.	Regular employer contributions	224,573
3.	Benefit payments and expenses	(687,952)
4.	Adjustments [1]	419,541
5.	Interest credited	651,342
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$9,527,972**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	92,192	114,700
Tier 2 Police & Fire	0	0
Tier 2 General Service	57,146	53,656
Total	**$149,338**	**$168,356**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$147,626	$149,338	$1,712

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	3,399,479	3,903,473
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	1,284,814	1,120,671
▪ **Total Active Members**	**$4,684,293**	**$5,024,144**
Dormant Members	546,727	62,346
Retired Members and Beneficiaries	8,297,975	8,044,730
Total Actuarial Accrued Liability	**$13,528,995**	**$13,131,220**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$13,196,454	$13,528,995	$332,541

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$13,528,995	$13,131,220
2. Actuarial value of assets	9,527,972	8,920,468
3. Unfunded accrued liability *(1. – 2.)*	4,001,023	4,210,752
4. Funded percentage *(2. ÷ 1.)*	70%	68%
5. Combined valuation payroll	$1,461,471	$1,560,891
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	274%	270%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$1,271,856	$98,892	$91,438	$1,264,402	$100,206
December 31, 2015	$2,938,896	$212,655	$211,921	$2,938,162	$214,998
December 31, 2016	N/A	N/A	N/A	($201,541)	($14,230)
Total				**$4,001,023**	**$300,974**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$13,131,220
b. Normal cost at December 31, 2015 (excluding assumed expenses)	160,564
c. Benefit payments during 2016	(682,167)
d. Interest at 7.50% to December 31, 2016	965,281
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	13,574,898
f. Change in actuarial accrued liability due to assumption, method, and plan changes	332,541
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	13,907,439
2. Actuarial accrued liability at December 31, 2016	13,528,995
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	378,444
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	8,920,468
b. Contributions for 2016[1]	224,573
c. Benefit payments and expenses during 2016	(687,952)
d. Interest at 7.50% to December 31, 2016	651,658
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	9,108,748
5. Actuarial value of assets at December 31, 2016	9,527,972
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	419,224
7. Total actuarial gain/(loss) *(3. + 6.)*	**$797,668**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$4,210,752**
2. Expected increase	255,398
3. Liability (gain)/loss	(378,444)
4. Asset (gain)/loss	(419,224)
5. Change due to changes in assumptions, methods, and plan provisions	332,541
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$4,001,023**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	92,192	562,771	16.38%	114,700	714,430	16.05%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	57,146	491,649	11.62%	53,656	477,184	11.24%
Total	**$149,338**	**$1,054,420**	**14.16%**	**$168,356**	**$1,191,614**	**14.13%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$4,001,023	$4,210,752
2. Next year's Tier 1/Tier 2 UAL payment	300,974	311,547
3. Combined valuation payroll	1,461,471	1,560,891
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	20.59%	19.96%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.16%	14.13%
b. Tier 1/Tier 2 UAL rate	20.59%	19.96%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	34.89%	34.24%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	22.61%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	22.61%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	4.52%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.52%
c. Funded percentage	70%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.52%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	18.09%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	27.13%
7. Advisory July 1, 2019 total pension rate, before adjustment	34.89%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(7.76%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	20.59%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	12.83%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	27.13%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	14.16%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	14.16%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	27.13%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.16%	14.13%
b. Tier 1/Tier 2 UAL rate	12.83%	8.33%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	27.13%	22.61%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$562,771	$0	$562,771
Tier 2	491,649	0	491,649
Tier 1/Tier 2 valuation payroll	1,054,420	0	1,054,420
OPSRP valuation payroll	407,051	0	407,051
Combined valuation payroll	**$1,461,471**	**$0**	**$1,461,471**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	6	6	5	17	8	6	5	19
Police & Fire	0	0	0	0	0	0	0	0
Total	6	6	5	17	8	6	5	19
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	3	0	2	5	1	1	2	4
Police & Fire	0	0	0	0	0	0	0	0
Total	3	0	2	5	1	1	2	4
Retired Members and Beneficiaries								
General Service	16	2	0	18	16	1	0	17
Police & Fire	0	0	0	0	0	0	0	0
Total	16	2	0	18	16	1	0	17
Grand Total Number of Members	**25**	**8**	**7**	**40**	**25**	**8**	**7**	**40**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44			1	1						**2**
45-49				1	3					**4**
50-54			2							**2**
55-59							2			**2**
60-64				1						**1**
65-69								1		**1**
70-74										
75+										
Total	**0**	**0**	**3**	**3**	**3**	**0**	**2**	**1**	**0**	**12**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	2,610
45-49		
50-54	1	41,495
55-59	1	305
60-64		
65-69		
70-74		
75+		
Total	3	14,803

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	121
60-64	6	3,310
65-69	6	2,345
70-74	2	3,673
75-79	2	2,768
80-84	1	2,710
85-89		
90-94		
95-99		
100+		
Total	18	2,758

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Douglas County Fire District #2/2729
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Douglas County Fire District #2/2729

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Douglas County Fire District #2 -- #2729

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Douglas County Fire District #2 to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Douglas County Fire District #2.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Douglas County Fire District #2

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	20.50%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	22.81%	22.81%	22.81%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**44.87%**	**32.86%**	**37.59%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**45.36%**	**33.28%**	**38.01%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 52%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	30.93%	30.93%
Minimum 2019-2021 Rate	24.74%	18.55%
Maximum 2019-2021 Rate	37.12%	43.31%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$19,613,988	$31,008,691	$11,394,703	63%	$5,860,669	194%
12/31/2012	21,018,049	31,222,770	10,204,721	67%	5,735,311	178%
12/31/2013	23,382,518	32,170,990	8,788,472	73%	5,954,566	148%
12/31/2014	23,722,884	39,164,166	15,441,282	61%	6,042,295	256%
12/31/2015	22,565,194	40,579,043	18,013,849	56%	6,339,143	284%
12/31/2016	22,726,938	43,511,904	20,784,966	52%	4,702,501	442%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Douglas County Fire District #2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$20,784,966	$18,013,849
Allocated pooled OPSRP UAL	809,593	901,198
Side account	0	0
Net unfunded pension actuarial accrued liability	21,594,559	18,915,047
Combined valuation payroll	4,702,501	6,339,143
Net pension UAL as a percentage of payroll	459%	298%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($640)	$30,781

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$537,426	$528,304
Tier 1/Tier 2 valuation payroll	2,621,464	2,694,558
Tier 1/Tier 2 pension normal cost rate	20.50%	19.61%
Tier 1/ Tier 2 Actuarial accrued liability	$43,511,904	$40,579,043
Actuarial asset value	22,726,938	22,565,194
Tier 1/Tier 2 Unfunded actuarial accrued liability	20,784,966	18,013,849
Tier 1/ Tier 2 Funded status	52%	56%
Combined valuation payroll	$4,702,501	$6,339,143
Tier 1/Tier 2 UAL as a percentage of payroll	442%	284%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	22.81%	11.32%
Tier 1/Tier 2 active members [1]	27	28
Tier 1/Tier 2 dormant members	6	3
Tier 1/Tier 2 retirees and beneficiaries	44	43

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	4,702,501	6,339,143
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$2,438,682	$2,502,513
2. Employer reserves	8,083,298	7,585,895
3. Benefits in force reserve	12,204,957	12,476,787
4. Total market value of assets ***(1. + 2. + 3.)***	**$22,726,938**	**$22,565,194**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$22,565,194
2.	Regular employer contributions	791,991
3.	Benefit payments and expenses	(2,389,670)
4.	Adjustments [1]	171,661
5.	Interest credited	1,587,761
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$22,726,938**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$284,080	$286,659
Tier 1 General Service	20,794	19,614
Tier 2 Police & Fire	226,915	217,009
Tier 2 General Service	5,637	5,022
Total	**$537,426**	**$528,304**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$518,323	$537,426	$19,103

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$9,801,889	$9,622,927
▪ Tier 1 General Service	502,925	436,044
▪ Tier 2 Police & Fire	3,948,869	3,491,239
▪ Tier 2 General Service	91,542	74,827
▪ **Total Active Members**	**$14,345,225**	**$13,625,037**
Dormant Members	342,846	14,235
Retired Members and Beneficiaries	28,823,833	26,939,771
Total Actuarial Accrued Liability	**$43,511,904**	**$40,579,043**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$42,199,544	$43,511,904	$1,312,360

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$43,511,904	$40,579,043
2. Actuarial value of assets	22,726,938	22,565,194
3. Unfunded accrued liability *(1. – 2.)*	20,784,966	18,013,849
4. Funded percentage *(2. ÷ 1.)*	52%	56%
5. Combined valuation payroll	$4,702,501	$6,339,143
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	442%	284%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$8,781,692	$682,816	$631,348	$8,730,224	$691,887
December 31, 2015	$9,232,157	$668,029	$665,723	$9,229,851	$675,388
December 31, 2016	N/A	N/A	N/A	$2,824,891	$199,456
Total				**$20,784,966**	**$1,566,731**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$40,579,043
b. Normal cost at December 31, 2015 (excluding assumed expenses)	503,639
c. Benefit payments during 2016	(2,369,575)
d. Interest at 7.50% to December 31, 2016	2,973,456
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	41,686,563
f. Change in actuarial accrued liability due to assumption, method, and plan changes	1,312,360
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	42,998,923
2. Actuarial accrued liability at December 31, 2016	43,511,904
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(512,981)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	22,565,194
b. Contributions for 2016[1]	791,991
c. Benefit payments and expenses during 2016	(2,389,670)
d. Interest at 7.50% to December 31, 2016	1,632,477
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	22,599,992
5. Actuarial value of assets at December 31, 2016	22,726,938
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	126,946
7. Total actuarial gain/(loss) *(3. + 6.)*	**($386,035)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$18,013,849**
2. Expected increase	1,072,722
3. Liability (gain)/loss	512,981
4. Asset (gain)/loss	(126,946)
5. Change due to changes in assumptions, methods, and plan provisions	1,312,360
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$20,784,966**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$284,080	$1,265,253	22.45%	$286,659	$1,339,956	21.39%
Tier 1 General Service	20,794	174,304	11.93%	19,614	171,743	11.42%
Tier 2 Police & Fire	226,915	1,132,318	20.04%	217,009	1,138,016	19.07%
Tier 2 General Service	5,637	49,589	11.37%	5,022	44,843	11.20%
Total	**$537,426**	**$2,621,464**	**20.50%**	**$528,304**	**$2,694,558**	**19.61%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$20,784,966	$18,013,849
2. Next year's Tier 1/Tier 2 UAL payment	1,566,731	1,350,845
3. Combined valuation payroll	4,702,501	6,339,143
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	33.32%	21.31%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	20.50%	19.61%
b. Tier 1/Tier 2 UAL rate	33.32%	21.31%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	53.96%	41.07%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	30.93%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	30.93%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	6.19%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	6.19%
c. Funded percentage	52%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	12.38%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	18.55%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	43.31%
7. Advisory July 1, 2019 total pension rate, before adjustment	53.96%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(10.65%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	33.32%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	22.67%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	43.31%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	20.50%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	20.50%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	43.31%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	20.50%	19.61%
b. Tier 1/Tier 2 UAL rate	22.67%	11.17%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	43.31%	30.93%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$174,304	$1,265,253	$1,439,557
Tier 2	49,589	1,132,318	1,181,907
Tier 1/Tier 2 valuation payroll	223,893	2,397,571	2,621,464
OPSRP valuation payroll	309,822	1,771,215	2,081,037
Combined valuation payroll	**$533,715**	**$4,168,786**	**$4,702,501**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	1	10	13	2	1	36	39
Police & Fire	12	12	19	43	13	12	19	44
Total	14	13	29	56	15	13	55	83
Active Members with previous service segments with the employer								
General Service	2	2	N/A	4	1	1	N/A	2
Police & Fire	4	3	N/A	7	4	3	N/A	7
Total	6	5	N/A	11	5	4	N/A	9
Dormant Members								
General Service	0	4	13	17	0	2	5	7
Police & Fire	2	0	1	3	1	0	0	1
Total	2	4	14	20	1	2	5	8
Retired Members and Beneficiaries								
General Service	1	1	2	4	1	1	2	4
Police & Fire	42	0	0	42	40	1	0	41
Total	43	1	2	46	41	2	2	45
Grand Total Number of Members	**65**	**23**	**45**	**133**	**62**	**21**	**62**	**145**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39			1	2						**3**
40-44				4						**4**
45-49				2	2	2				**6**
50-54				3	5		1			**9**
55-59					2	1				**3**
60-64			1		1					**2**
65-69										
70-74										
75+										
Total	**0**	**0**	**2**	**11**	**10**	**3**	**1**	**0**	**0**	**27**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	4	556
50-54		
55-59	1	797
60-64		
65-69		
70-74	1	69
75+		
Total	6	515

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	2	4,322
55-59	9	3,542
60-64	12	5,288
65-69	7	4,275
70-74	7	2,535
75-79	5	2,367
80-84	2	2,649
85-89		
90-94		
95-99		
100+		
Total	44	3,836

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Douglas County/2003
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Douglas County/2003

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Douglas County/2003

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Douglas County -- #2003

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Douglas County to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Douglas County.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Douglas County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.42%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	17.07%	17.07%	17.07%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**38.05%**	**27.12%**	**31.85%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**38.54%**	**27.54%**	**32.27%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 70%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	30.41%	30.41%
Minimum 2019-2021 Rate	24.33%	18.25%
Maximum 2019-2021 Rate	36.49%	42.57%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$228,167,624	$308,521,151	$80,353,527	74%	$29,880,985	269%
12/31/2012	248,078,897	298,085,583	50,006,686	83%	30,384,722	165%
12/31/2013	270,412,262	306,548,858	36,136,596	88%	30,015,440	120%
12/31/2014	272,545,357	352,700,431	80,155,074	77%	24,683,050	325%
12/31/2015	262,352,745	363,015,387	100,662,642	72%	24,936,214	404%
12/31/2016	262,318,454	377,184,671	114,866,217	70%	24,783,078	463%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Douglas County

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$114,866,217	$100,662,642
Allocated pooled OPSRP UAL	4,266,709	3,545,031
Side account	0	0
Net unfunded pension actuarial accrued liability	119,132,926	104,207,673
Combined valuation payroll	24,783,078	24,936,214
Net pension UAL as a percentage of payroll	481%	418%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($3,374)	$121,082

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$2,179,893	$2,431,726
Tier 1/Tier 2 valuation payroll	11,226,510	12,420,710
Tier 1/Tier 2 pension normal cost rate	19.42%	19.58%
Tier 1/ Tier 2 Actuarial accrued liability	$377,184,671	$363,015,387
Actuarial asset value	262,318,454	262,352,745
Tier 1/Tier 2 Unfunded actuarial accrued liability	114,866,217	100,662,642
Tier 1/ Tier 2 Funded status	70%	72%
Combined valuation payroll	$24,783,078	$24,936,214
Tier 1/Tier 2 UAL as a percentage of payroll	463%	404%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	17.07%	10.83%
Tier 1/Tier 2 active members [1]	191	220
Tier 1/Tier 2 dormant members	232	231
Tier 1/Tier 2 retirees and beneficiaries	1,196	1,176

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	24,783,078	24,936,214
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$31,274,172	$33,945,661
2. Employer reserves	114,447,529	108,521,490
3. Benefits in force reserve	116,596,754	119,885,594
4. Total market value of assets ***(1. + 2. + 3.)***	**$262,318,454**	**$262,352,745**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$262,352,745
2. Regular employer contributions	4,431,827
3. Benefit payments and expenses	(22,829,066)
4. Adjustments [1]	228,327
5. Interest credited	18,134,621
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$262,318,454**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$388,059	$372,973
Tier 1 General Service	908,475	1,199,756
Tier 2 Police & Fire	404,866	388,993
Tier 2 General Service	478,493	470,004
Total	**$2,179,893**	**$2,431,726**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$2,140,888	$2,179,893	$39,005

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$13,316,777	$13,548,529
▪ Tier 1 General Service	37,541,664	45,080,078
▪ Tier 2 Police & Fire	8,705,769	7,973,386
▪ Tier 2 General Service	14,004,839	13,017,635
▪ **Total Active Members**	**$73,569,049**	**$79,619,628**
Dormant Members	28,254,942	24,539,809
Retired Members and Beneficiaries	275,360,680	258,855,950
Total Actuarial Accrued Liability	**$377,184,671**	**$363,015,387**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$368,852,224	$377,184,671	$8,332,447

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$377,184,671	$363,015,387
2. Actuarial value of assets	262,318,454	262,352,745
3. Unfunded accrued liability *(1. – 2.)*	114,866,217	100,662,642
4. Funded percentage *(2. ÷ 1.)*	70%	72%
5. Combined valuation payroll	$24,783,078	$24,936,214
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	463%	404%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$36,108,720	$2,807,614	$2,595,987	$35,897,093	$2,844,911
December 31, 2015	$64,553,922	$4,671,051	$4,654,931	$64,537,802	$4,722,509
December 31, 2016	N/A	N/A	N/A	$14,431,322	$1,018,945
Total				**$114,866,217**	**$8,586,365**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$363,015,387
b. Normal cost at December 31, 2015 (excluding assumed expenses)	2,319,147
c. Benefit payments during 2016	(22,637,089)
d. Interest at 7.50% to December 31, 2016	26,464,231
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	369,161,676
f. Change in actuarial accrued liability due to assumption, method, and plan changes	8,332,447
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	377,494,123
2. Actuarial accrued liability at December 31, 2016	377,184,671
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	309,452
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	262,352,745
b. Contributions for 2016[1]	4,431,827
c. Benefit payments and expenses during 2016	(22,829,066)
d. Interest at 7.50% to December 31, 2016	18,986,559
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	262,942,065
5. Actuarial value of assets at December 31, 2016	262,318,454
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(623,611)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($314,159)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$100,662,642**
2. Expected increase	5,556,969
3. Liability (gain)/loss	(309,452)
4. Asset (gain)/loss	623,611
5. Change due to changes in assumptions, methods, and plan provisions	8,332,447
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$114,866,217**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$388,059	$1,649,775	23.52%	$372,973	$1,649,296	22.61%
Tier 1 General Service	908,475	3,888,865	23.36%	1,199,756	5,094,773	23.55%
Tier 2 Police & Fire	404,866	2,010,112	20.14%	388,993	2,012,550	19.33%
Tier 2 General Service	478,493	3,677,758	13.01%	470,004	3,664,091	12.83%
Total	**$2,179,893**	**$11,226,510**	**19.42%**	**$2,431,726**	**$12,420,710**	**19.58%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$114,866,217	$100,662,642
2. Next year's Tier 1/Tier 2 UAL payment	8,586,365	7,478,665
3. Combined valuation payroll	24,783,078	24,936,214
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	34.65%	29.99%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.42%	19.58%
b. Tier 1/Tier 2 UAL rate	34.65%	29.99%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	54.21%	49.72%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	30.41%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	30.41%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	6.08%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	6.08%
c. Funded percentage	70%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.08%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	24.33%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	36.49%
7. Advisory July 1, 2019 total pension rate, before adjustment	54.21%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(17.72%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	34.65%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	16.93%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	36.49%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	19.42%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.42%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	36.49%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.42%	19.58%
b. Tier 1/Tier 2 UAL rate	16.93%	10.68%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	36.49%	30.41%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$3,888,865	$1,649,775	$5,538,640
Tier 2	3,677,758	2,010,112	5,687,870
Tier 1/Tier 2 valuation payroll	7,566,623	3,659,887	11,226,510
OPSRP valuation payroll	9,690,752	3,865,816	13,556,568
Combined valuation payroll	**$17,257,375**	**$7,525,703**	**$24,783,078**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	75	73	260	408	98	77	226	401
Police & Fire	19	24	62	105	21	24	60	105
Total	94	97	322	513	119	101	286	506
Active Members with previous service segments with the employer								
General Service	96	95	N/A	191	105	88	N/A	193
Police & Fire	13	17	N/A	30	16	17	N/A	33
Total	109	112	N/A	221	121	105	N/A	226
Dormant Members								
General Service	114	104	86	304	107	110	73	290
Police & Fire	6	8	4	18	6	8	4	18
Total	120	112	90	322	113	118	77	308
Retired Members and Beneficiaries								
General Service	935	80	23	1,038	911	90	19	1,020
Police & Fire	168	13	1	182	159	16	1	176
Total	1,103	93	24	1,220	1,070	106	20	1,196
Grand Total Number of Members	**1,426**	**414**	**436**	**2,276**	**1,423**	**430**	**383**	**2,236**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34				1						**1**
35-39		2	4	3						**9**
40-44		1	11	10	2					**24**
45-49			7	14	10	5				**36**
50-54			7	8	8	9	3			**35**
55-59			3	9	3	11	1	2		**29**
60-64			5	10	13	9	3	3		**43**
65-69			2		2	4	1		1	**10**
70-74		1		1	1					**3**
75+					1					**1**
Total	**0**	**4**	**39**	**56**	**40**	**38**	**8**	**5**	**1**	**191**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	4	338
40-44	13	573
45-49	18	1,095
50-54	37	1,185
55-59	54	803
60-64	64	1,095
65-69	23	1,900
70-74	9	137
75+	10	597
Total	232	1,020

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	2	971
45-49	5	1,531
50-54	16	1,673
55-59	56	1,495
60-64	193	1,968
65-69	282	1,714
70-74	230	1,431
75-79	162	1,513
80-84	132	1,501
85-89	68	938
90-94	36	571
95-99	14	643
100+		
Total	1,196	1,546

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Douglas Soil & Water Conservation District/2743
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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November 2017
Douglas Soil & Water Conservation District/2743

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Douglas Soil & Water Conservation District/2743

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Douglas Soil & Water Conservation District -- #2743

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Douglas Soil & Water Conservation District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Douglas Soil & Water Conservation District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Douglas Soil & Water Conservation District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.19%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(12.35%)	(12.35%)	(12.35%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**10.40%**	**0.00%**	**2.43%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**10.89%**	**0.42%**	**2.85%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 137%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	5.50%	5.50%
Minimum 2019-2021 Rate	2.50%	0.00%
Maximum 2019-2021 Rate	8.50%	11.50%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$486,244	$424,745	($61,499)	114%	$242,761	(25%)
12/31/2012	577,655	353,317	(224,338)	163%	225,262	(100%)
12/31/2013	646,570	408,777	(237,793)	158%	208,958	(114%)
12/31/2014	689,577	461,101	(228,476)	150%	158,904	(144%)
12/31/2015	707,135	510,214	(196,921)	139%	93,397	(211%)
12/31/2016	747,244	545,593	(201,651)	137%	129,559	(156%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Douglas Soil & Water Conservation District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($201,651)	($196,921)
Allocated pooled OPSRP UAL	22,305	13,278
Side account	0	0
Net unfunded pension actuarial accrued liability	(179,346)	(183,643)
Combined valuation payroll	129,559	93,397
Net pension UAL as a percentage of payroll	(138%)	(197%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($18)	$454

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$11,200	$10,897
Tier 1/Tier 2 valuation payroll	52,857	55,331
Tier 1/Tier 2 pension normal cost rate	21.19%	21.98%
Tier 1/ Tier 2 Actuarial accrued liability	$545,593	$510,214
Actuarial asset value	747,244	707,135
Tier 1/Tier 2 Unfunded actuarial accrued liability	(201,651)	(196,921)
Tier 1/ Tier 2 Funded status	137%	139%
Combined valuation payroll	$129,559	$93,397
Tier 1/Tier 2 UAL as a percentage of payroll	(156%)	(211%)
Tier 1/Tier 2 UAL rate	(12.35%)	(16.48%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	5	5
Tier 1/Tier 2 retirees and beneficiaries	2	2

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	129,559	93,397
3. Average Amortization factor	8.994	9.504
4. Total side account rate ***(-1. ÷ 2. ÷ 3.)*** [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$222,023	$210,139
2. Employer reserves	490,506	460,044
3. Benefits in force reserve	34,714	36,952
4. Total market value of assets ***(1. + 2. + 3.)***	**$747,244**	**$707,135**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$707,135
2.	Regular employer contributions	(2,103)
3.	Benefit payments and expenses	(6,797)
4.	Adjustments [1]	(1,664)
5.	Interest credited	50,672
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$747,244**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	11,200	10,897
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$11,200**	**$10,897**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$11,327	$11,200	($127)

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	331,925	305,393
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	14,504	14,918
▪ **Total Active Members**	**$346,429**	**$320,311**
Dormant Members	117,180	110,115
Retired Members and Beneficiaries	81,984	79,788
Total Actuarial Accrued Liability	**$545,593**	**$510,214**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$551,740	$545,593	($6,147)

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$545,593	$510,214
2. Actuarial value of assets	747,244	707,135
3. Unfunded accrued liability *(1. – 2.)*	(201,651)	(196,921)
4. Funded percentage *(2. ÷ 1.)*	137%	139%
5. Combined valuation payroll	$129,559	$93,397
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(156%)	(211%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($237,610)	($18,475)	($17,083)	($236,218)	($18,721)
December 31, 2015	$40,689	$2,944	$2,934	$40,679	$2,977
December 31, 2016	N/A	N/A	N/A	($6,112)	($432)
Total				**($201,651)**	**($16,176)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$510,214
b. Normal cost at December 31, 2015 (excluding assumed expenses)	10,393
c. Benefit payments during 2016	(6,740)
d. Interest at 7.50% to December 31, 2016	38,403
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	552,270
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(6,147)
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	546,123
2. Actuarial accrued liability at December 31, 2016	545,593
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	530
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	707,135
b. Contributions for 2016[1]	(2,103)
c. Benefit payments and expenses during 2016	(6,797)
d. Interest at 7.50% to December 31, 2016	52,701
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	750,937
5. Actuarial value of assets at December 31, 2016	747,244
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(3,693)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($3,163)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($196,921)**
2. Expected increase	(1,746)
3. Liability (gain)/loss	(530)
4. Asset (gain)/loss	3,693
5. Change due to changes in assumptions, methods, and plan provisions	(6,147)
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**($201,651)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	11,200	52,857	21.19%	10,897	55,331	19.69%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$11,200**	**$52,857**	**21.19%**	**$10,897**	**$55,331**	**19.69%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($201,651)	($196,921)
2. Next year's Tier 1/Tier 2 UAL payment	(16,176)	(15,531)
3. Combined valuation payroll	129,559	93,397
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(12.49%)	(16.63%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.19%	19.69%
b. Tier 1/Tier 2 UAL rate	(12.49%)	(16.63%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	8.84%	3.21%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	5.50%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	5.50%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.10%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	137%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	5.10%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	0.40%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	10.60%
7. Advisory July 1, 2019 total pension rate, before adjustment	8.84%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(12.49%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(12.49%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	8.84%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	21.19%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.19%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	8.84%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.19%	21.98%
b. Tier 1/Tier 2 UAL rate	(12.49%)	(16.63%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	8.84%	5.50%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$52,857	$0	$52,857
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	52,857	0	52,857
OPSRP valuation payroll	76,702	0	76,702
Combined valuation payroll	**$129,559**	**$0**	**$129,559**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	2	3	1	0	1	2
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	2	3	1	0	1	2
Active Members with previous service segments with the employer								
General Service	3	1	N/A	4	3	1	N/A	4
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	3	1	N/A	4	3	1	N/A	4
Dormant Members								
General Service	2	3	1	6	2	3	1	6
Police & Fire	0	0	0	0	0	0	0	0
Total	2	3	1	6	2	3	1	6
Retired Members and Beneficiaries								
General Service	1	1	0	2	1	1	0	2
Police & Fire	0	0	0	0	0	0	0	0
Total	1	1	0	2	1	1	0	2
Grand Total Number of Members	**7**	**5**	**3**	**15**	**7**	**5**	**2**	**14**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59						1				**1**
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	2	589
50-54	1	199
55-59	1	4
60-64		
65-69		
70-74	1	746
75+		
Total	5	426

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	19
60-64		
65-69		
70-74	1	585
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	2	302

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

East Fork Irrigation District/2529
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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November 2017
East Fork Irrigation District/2529

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

East Fork Irrigation District -- #2529

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for East Fork Irrigation District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to East Fork Irrigation District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for East Fork Irrigation District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.80%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(6.51%)	(6.51%)	(6.51%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**16.85%**	**3.54%**	**8.27%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**17.34%**	**3.96%**	**8.69%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 96%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	12.29%	12.29%
Minimum 2019-2021 Rate	9.29%	6.29%
Maximum 2019-2021 Rate	15.29%	18.29%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,369,662	$1,464,619	$94,957	94%	$247,525	38%
12/31/2012	1,574,498	1,451,273	(123,225)	108%	253,094	(49%)
12/31/2013	1,797,235	1,558,241	(238,994)	115%	261,005	(92%)
12/31/2014	1,934,328	1,826,051	(108,277)	106%	286,685	(38%)
12/31/2015	1,976,598	2,080,117	103,519	95%	247,706	42%
12/31/2016	2,099,208	2,195,194	95,986	96%	236,657	41%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

East Fork Irrigation District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$95,986	$103,519
Allocated pooled OPSRP UAL	40,743	35,215
Side account	0	0
Net unfunded pension actuarial accrued liability	136,729	138,734
Combined valuation payroll	236,657	247,706
Net pension UAL as a percentage of payroll	58%	56%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($32)	$1,203

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$37,287	$41,581
Tier 1/Tier 2 valuation payroll	171,053	200,255
Tier 1/Tier 2 pension normal cost rate	21.80%	20.76%
Tier 1/ Tier 2 Actuarial accrued liability	$2,195,194	$2,080,117
Actuarial asset value	2,099,208	1,976,598
Tier 1/Tier 2 Unfunded actuarial accrued liability	95,986	103,519
Tier 1/ Tier 2 Funded status	96%	95%
Combined valuation payroll	$236,657	$247,706
Tier 1/Tier 2 UAL as a percentage of payroll	41%	42%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(6.51%)	(8.47%)
Tier 1/Tier 2 active members [1]	4	4
Tier 1/Tier 2 dormant members	3	3
Tier 1/Tier 2 retirees and beneficiaries	5	5

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	236,657	247,706
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$731,894	$693,648
2. Employer reserves	1,218,012	1,121,787
3. Benefits in force reserve	149,301	161,163
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,099,208**	**$1,976,598**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$1,976,598
2.	Regular employer contributions	15,227
3.	Benefit payments and expenses	(29,233)
4.	Adjustments [1]	(5,330)
5.	Interest credited	141,946
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,099,208**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	31,073	29,999
Tier 2 Police & Fire	0	0
Tier 2 General Service	6,214	11,582
Total	**$37,287**	**$41,581**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$37,234	$37,287	$53

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	1,213,711	1,142,941
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	252,370	226,455
▪ **Total Active Members**	**$1,466,081**	**$1,369,396**
Dormant Members	376,515	362,738
Retired Members and Beneficiaries	352,598	347,983
Total Actuarial Accrued Liability	**$2,195,194**	**$2,080,117**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,192,255	$2,195,194	$2,939

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$2,195,194	$2,080,117
2. Actuarial value of assets	2,099,208	1,976,598
3. Unfunded accrued liability *(1. – 2.)*	95,986	103,519
4. Funded percentage *(2. ÷ 1.)*	96%	95%
5. Combined valuation payroll	$236,657	$247,706
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	41%	42%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($238,810)	($18,569)	($17,169)	($237,410)	($18,815)
December 31, 2015	$342,329	$24,771	$24,685	$342,243	$25,043
December 31, 2016	N/A	N/A	N/A	($8,847)	($625)
Total				**$95,986**	**$5,603**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$2,080,117
b. Normal cost at December 31, 2015 (excluding assumed expenses)	39,657
c. Benefit payments during 2016	(28,987)
d. Interest at 7.50% to December 31, 2016	156,409
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,247,196
f. Change in actuarial accrued liability due to assumption, method, and plan changes	2,939
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	2,250,135
2. Actuarial accrued liability at December 31, 2016	2,195,194
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	54,941
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,976,598
b. Contributions for 2016[1]	15,227
c. Benefit payments and expenses during 2016	(29,233)
d. Interest at 7.50% to December 31, 2016	147,720
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	2,110,312
5. Actuarial value of assets at December 31, 2016	2,099,208
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(11,104)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$43,837**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$103,519**
2. Expected increase	33,365
3. Liability (gain)/loss	(54,941)
4. Asset (gain)/loss	11,104
5. Change due to changes in assumptions, methods, and plan provisions	2,939
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$95,986**

1 *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	31,073	121,931	25.48%	29,999	120,774	24.84%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	6,214	49,122	12.65%	11,582	79,481	14.57%
Total	**$37,287**	**$171,053**	**21.80%**	**$41,581**	**$200,255**	**20.76%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$95,986	$103,519
2. Next year's Tier 1/Tier 2 UAL payment	5,603	6,202
3. Combined valuation payroll	236,657	247,706
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	2.37%	2.50%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.80%	20.76%
b. Tier 1/Tier 2 UAL rate	2.37%	2.50%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	24.31%	23.41%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	12.29%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	12.29%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.46%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	96%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	9.29%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	15.29%
7. Advisory July 1, 2019 total pension rate, before adjustment	24.31%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(9.02%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	2.37%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(6.65%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	15.29%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	21.80%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.80%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	15.29%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.80%	20.76%
b. Tier 1/Tier 2 UAL rate	(6.65%)	(8.62%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	15.29%	12.29%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$121,931	$0	$121,931
Tier 2	49,122	0	49,122
Tier 1/Tier 2 valuation payroll	171,053	0	171,053
OPSRP valuation payroll	65,604	0	65,604
Combined valuation payroll	**$236,657**	**$0**	**$236,657**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	2	2	6	2	2	2	6
Police & Fire	0	0	0	0	0	0	0	0
Total	2	2	2	6	2	2	2	6
Active Members with previous service segments with the employer								
General Service	2	0	N/A	2	2	0	N/A	2
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	2	0	N/A	2	2	0	N/A	2
Dormant Members								
General Service	2	1	1	4	2	1	0	3
Police & Fire	0	0	0	0	0	0	0	0
Total	2	1	1	4	2	1	0	3
Retired Members and Beneficiaries								
General Service	4	1	0	5	4	1	0	5
Police & Fire	0	0	0	0	0	0	0	0
Total	4	1	0	5	4	1	0	5
Grand Total Number of Members	**10**	**4**	**3**	**17**	**10**	**4**	**2**	**16**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54					1					**1**
55-59						1				**1**
60-64								1		**1**
65-69										
70-74				1						**1**
75+										
Total	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**1**	**0**	**4**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	1	1,823
55-59		
60-64	2	444
65-69		
70-74		
75+		
Total	3	903

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	1,127
65-69		
70-74		
75-79	2	146
80-84	1	1,102
85-89	1	672
90-94		
95-99		
100+		
Total	5	639

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Estacada Cemetery District/2618
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

Milliman

November 2017
Estacada Cemetery District/2618

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Estacada Cemetery District/2618

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Estacada Cemetery District -- #2618

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Estacada Cemetery District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Estacada Cemetery District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Estacada Cemetery District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	20.81%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(15.30%)	(15.30%)	(15.30%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**7.07%**	**0.00%**	**0.00%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**7.56%**	**0.42%**	**0.42%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 363%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	5.50%	5.50%
Minimum 2019-2021 Rate	2.50%	0.00%
Maximum 2019-2021 Rate	8.50%	11.50%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$235,178	$60,314	($174,864)	390%	$54,019	(324%)
12/31/2012	268,608	62,221	(206,387)	432%	51,551	(400%)
12/31/2013	309,375	71,677	(237,698)	432%	52,902	(449%)
12/31/2014	329,492	84,441	(245,051)	390%	51,430	(476%)
12/31/2015	333,829	87,875	(245,954)	380%	55,920	(440%)
12/31/2016	352,981	97,134	(255,847)	363%	58,128	(440%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Estacada Cemetery District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($255,847)	($245,954)
Allocated pooled OPSRP UAL	10,007	7,950
Side account	0	0
Net unfunded pension actuarial accrued liability	(245,840)	(238,004)
Combined valuation payroll	58,128	55,920
Net pension UAL as a percentage of payroll	(423%)	(426%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($8)	$272

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$1,188	$1,124
Tier 1/Tier 2 valuation payroll	7,766	7,149
Tier 1/Tier 2 pension normal cost rate	20.81%	21.22%
Tier 1/ Tier 2 Actuarial accrued liability	$97,134	$87,875
Actuarial asset value	352,981	333,829
Tier 1/Tier 2 Unfunded actuarial accrued liability	(255,847)	(245,954)
Tier 1/ Tier 2 Funded status	363%	380%
Combined valuation payroll	$58,128	$55,920
Tier 1/Tier 2 UAL as a percentage of payroll	(440%)	(440%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(15.30%)	(15.72%)
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	58,128	55,920
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$35,931	$34,110
2. Employer reserves	317,050	299,719
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$352,981**	**$333,829**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$333,829
2. Regular employer contributions	(3,745)
3. Benefit payments and expenses	0
4. Adjustments [1]	(647)
5. Interest credited	23,544
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$352,981**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	1,188	1,124
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$1,188**	**$1,124**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$1,186	$1,188	$2

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	28,148	22,245
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$28,148**	**$22,245**
Dormant Members	68,986	65,630
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$97,134**	**$87,875**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$97,553	$97,134	($419)

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$97,134	$87,875
2. Actuarial value of assets	352,981	333,829
3. Unfunded accrued liability *(1. – 2.)*	(255,847)	(245,954)
4. Funded percentage *(2. ÷ 1.)*	363%	380%
5. Combined valuation payroll	$58,128	$55,920
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(440%)	(440%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($237,515)	($18,468)	($17,076)	($236,123)	($18,713)
December 31, 2015	($8,439)	($611)	($609)	($8,437)	($617)
December 31, 2016	N/A	N/A	N/A	($11,287)	($797)
Total				**($255,847)**	**($20,127)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$87,875
b. Normal cost at December 31, 2015 (excluding assumed expenses)	1,124
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	6,633
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	95,632
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(419)
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	95,213
2. Actuarial accrued liability at December 31, 2016	97,134
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(1,921)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	333,829
b. Contributions for 2016[1]	(3,745)
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	24,897
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	354,981
5. Actuarial value of assets at December 31, 2016	352,981
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(2,000)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($3,921)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($245,954)**
2. Expected increase	(13,395)
3. Liability (gain)/loss	1,921
4. Asset (gain)/loss	2,000
5. Change due to changes in assumptions, methods, and plan provisions	(419)
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($255,847)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	1,188	7,766	15.30%	1,124	7,149	15.72%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$1,188**	**$7,766**	**15.30%**	**$1,124**	**$7,149**	**15.72%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($255,847)	($245,954)
2. Next year's Tier 1/Tier 2 UAL payment	(20,127)	(19,079)
3. Combined valuation payroll	58,128	55,920
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(34.63%)	(34.12%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.30%	15.72%
b. Tier 1/Tier 2 UAL rate	(34.63%)	(34.12%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	(19.19%)	(18.25%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	5.50%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	5.50%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.10%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	363%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	0.00%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	11.50%
7. Advisory July 1, 2019 total pension rate, before adjustment	(19.19%)
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	19.19%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(34.63%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(15.44%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	0.00%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	5.51%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	15.30%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	20.81%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	5.51%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	20.81%	21.22%
b. Tier 1/Tier 2 UAL rate	(15.44%)	(15.87%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	5.51%	5.50%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$7,766	$0	$7,766
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	7,766	0	7,766
OPSRP valuation payroll	50,362	0	50,362
Combined valuation payroll	**$58,128**	**$0**	**$58,128**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	1	1	0	0	1	1
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	1	1
Active Members with previous service segments with the employer								
General Service	1	0	N/A	1	1	0	N/A	1
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	0	N/A	1	1	0	N/A	1
Dormant Members								
General Service	0	1	0	1	0	1	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	1	0	1
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**1**	**1**	**1**	**3**	**1**	**1**	**1**	**3**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59	1	443
60-64		
65-69		
70-74		
75+		
Total	1	443

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Eugene Water & Electric Board/2132
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Eugene Water & Electric Board/2132

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Eugene Water & Electric Board -- #2132

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Eugene Water & Electric Board to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Eugene Water & Electric Board.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Eugene Water & Electric Board

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	14.03%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	20.48%	20.48%	20.48%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	(1.23%)	(1.23%)	(1.23%)
Net pension contribution rate	**34.84%**	**29.30%**	**34.03%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**35.33%**	**29.72%**	**34.45%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 66%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	26.96%	26.96%
Minimum 2019-2021 Rate	21.57%	16.18%
Maximum 2019-2021 Rate	32.35%	37.74%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$212,836,317	$306,418,228	$93,581,912	69%	$41,865,384	224%
12/31/2012	229,282,178	296,302,627	67,020,449	77%	42,796,406	157%
12/31/2013	252,345,343	301,660,662	49,315,319	84%	41,130,143	120%
12/31/2014	259,289,461	352,196,617	92,907,156	74%	45,250,685	205%
12/31/2015	250,411,124	356,594,144	106,183,020	70%	44,141,193	241%
12/31/2016	250,476,523	371,817,403	121,340,880	67%	44,353,971	274%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Eugene Water & Electric Board

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$126,266,697	$111,296,872
Allocated pooled OPSRP UAL	7,636,077	6,275,286
Side account	4,925,816	5,113,852
Net unfunded pension actuarial accrued liability	128,976,958	112,458,306
Combined valuation payroll	44,353,971	44,141,193
Net pension UAL as a percentage of payroll	291%	255%
Calculated side account rate relief	(1.23%)	(1.22%)
Allocated pooled RHIA UAL	($6,039)	$214,334

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$2,447,460	$2,652,406
Tier 1/Tier 2 valuation payroll	17,444,886	18,776,318
Tier 1/Tier 2 pension normal cost rate	14.03%	14.13%
Tier 1/ Tier 2 Actuarial accrued liability	$371,817,403	$356,594,144
Actuarial asset value	245,550,706	245,297,272
Tier 1/Tier 2 Unfunded actuarial accrued liability	126,266,697	111,296,872
Tier 1/ Tier 2 Funded status	66%	69%
Combined valuation payroll	$44,353,971	$44,141,193
Tier 1/Tier 2 UAL as a percentage of payroll	285%	252%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	20.48%	12.83%
Tier 1/Tier 2 active members [1]	176	195
Tier 1/Tier 2 dormant members	72	71
Tier 1/Tier 2 retirees and beneficiaries	609	604

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**	**$5,113,852**	**$5,113,852**
2. Deposits made during 2016		N/A	
3. Administrative expenses		(1,000)	(1,000)
4. Amount transferred to employer reserves during 2016		(537,642)	(537,642)
5. Side account earnings during 2016		350,606	350,606
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***		**$4,925,816**	**$4,925,816**

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$4,925,816	$5,113,852
Side account 2	0	0
Side account 3	0	0
Total	**$4,925,816**	**$5,113,852**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$4,925,816	$5,113,852
2. Combined valuation payroll	44,353,971	44,141,193
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	(1.23%)	(1.22%)

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$14,209,463	$16,764,722
2. Employer reserves	105,004,256	97,750,171
3. Benefits in force reserve	126,336,987	130,782,379
4. Total market value of assets ***(1. + 2. + 3.)***	**$245,550,706**	**$245,297,272**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$245,297,272
2. Regular employer contributions	5,928,382
3. Benefit payments and expenses	(24,736,156)
4. Adjustments [1]	1,624,050
5. Interest credited	16,899,517
6. Total transferred from side accounts	537,642
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$245,550,706**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	981,906	1,193,837
Tier 2 Police & Fire	0	0
Tier 2 General Service	1,465,554	1,458,569
Total	**$2,447,460**	**$2,652,406**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$2,402,952	$2,447,460	$44,508

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	26,386,390	31,203,973
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	27,885,470	25,539,636
▪ **Total Active Members**	**$54,271,860**	**$56,743,609**
Dormant Members	19,181,843	17,466,339
Retired Members and Beneficiaries	298,363,700	282,384,196
Total Actuarial Accrued Liability	**$371,817,403**	**$356,594,144**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$361,247,768	$371,817,403	$10,569,635

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$371,817,403	$356,594,144
2. Actuarial value of assets	245,550,706	245,297,272
3. Unfunded accrued liability *(1. – 2.)*	126,266,697	111,296,872
4. Funded percentage *(2. ÷ 1.)*	66%	69%
5. Combined valuation payroll	$44,353,971	$44,141,193
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	285%	252%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$54,795,151	$4,260,567	$3,939,422	$54,474,006	$4,317,166
December 31, 2015	$56,501,721	$4,088,402	$4,074,293	$56,487,612	$4,133,442
December 31, 2016	N/A	N/A	N/A	$15,305,079	$1,080,638
Total				**$126,266,697**	**$9,531,246**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$356,594,144
b. Normal cost at December 31, 2015 (excluding assumed expenses)	2,529,233
c. Benefit payments during 2016	(24,528,141)
d. Interest at 7.50% to December 31, 2016	25,919,602
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	360,514,838
f. Change in actuarial accrued liability due to assumption, method, and plan changes	10,569,635
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	371,084,473
2. Actuarial accrued liability at December 31, 2016	371,817,403
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(732,930)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	245,297,272
b. Contributions for 2016[1]	6,466,023
c. Benefit payments and expenses during 2016	(24,736,156)
d. Interest at 7.50% to December 31, 2016	17,712,165
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	244,739,305
5. Actuarial value of assets at December 31, 2016	245,550,706
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	811,401
7. Total actuarial gain/(loss) *(3. + 6.)*	**$78,471**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$111,296,872**
2. Expected increase	4,478,661
3. Liability (gain)/loss	732,930
4. Asset (gain)/loss	(811,401)
5. Change due to changes in assumptions, methods, and plan provisions	10,569,635
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$126,266,697**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	981,906	5,765,657	17.03%	1,193,837	6,882,877	17.35%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	1,465,554	11,679,229	12.55%	1,458,569	11,893,441	12.26%
Total	**$2,447,460**	**$17,444,886**	**14.03%**	**$2,652,406**	**$18,776,318**	**14.13%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$126,266,697	$111,296,872
2. Next year's Tier 1/Tier 2 UAL payment	9,531,246	8,348,969
3. Combined valuation payroll	44,353,971	44,141,193
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	21.49%	18.91%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.03%	14.13%
b. Tier 1/Tier 2 UAL rate	21.49%	18.91%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	35.66%	33.19%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	25.74%
2. Employer contribution rate attributable to side accounts	(1.22%)
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	26.96%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	5.39%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	5.39%
c. Funded percentage	66%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	7.55%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	19.41%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	34.51%
7. Advisory July 1, 2019 total pension rate, before adjustment	35.66%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(1.15%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	21.49%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	20.34%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	34.51%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	14.03%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	14.03%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	34.51%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.03%	14.13%
b. Tier 1/Tier 2 UAL rate	20.34%	12.68%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	34.51%	26.96%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$5,765,657	$0	$5,765,657
Tier 2	11,679,229	0	11,679,229
Tier 1/Tier 2 valuation payroll	17,444,886	0	17,444,886
OPSRP valuation payroll	26,909,085	0	26,909,085
Combined valuation payroll	**$44,353,971**	**$0**	**$44,353,971**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	58	118	310	486	71	124	298	493
Police & Fire	0	0	0	0	0	0	0	0
Total	58	118	310	486	71	124	298	493
Active Members with previous service segments with the employer								
General Service	8	10	N/A	18	8	9	N/A	17
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	8	10	N/A	18	8	9	N/A	17
Dormant Members								
General Service	36	36	49	121	37	34	37	108
Police & Fire	0	0	0	0	0	0	0	0
Total	36	36	49	121	37	34	37	108
Retired Members and Beneficiaries								
General Service	575	33	14	622	556	47	12	615
Police & Fire	1	0	0	1	1	0	0	1
Total	576	33	14	623	557	47	12	616
Grand Total Number of Members	**678**	**197**	**373**	**1,248**	**673**	**214**	**347**	**1,234**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39			6	5						11
40-44		1	6	9	1					17
45-49			11	16	7	2				36
50-54			5	16	8	6	1			36
55-59			8	10	9	13	2	1		43
60-64			3	9	8	2	2			24
65-69			2	4	1	1		1		9
70-74										
75+										
Total	0	1	41	69	34	24	5	2	0	176

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	2	1,283
45-49	10	1,583
50-54	15	1,555
55-59	28	2,336
60-64	13	2,143
65-69	3	1,863
70-74		
75+	1	2,794
Total	72	1,991

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	1	6,538
45-49	1	2,622
50-54	5	2,961
55-59	43	3,235
60-64	135	3,360
65-69	158	3,527
70-74	101	3,582
75-79	74	2,803
80-84	32	3,033
85-89	21	2,165
90-94	31	1,526
95-99	6	1,477
100+	1	265
Total	609	3,189

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Evans Valley Fire District #6/2623
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Evans Valley Fire District #6/2623

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Evans Valley Fire District #6 -- #2623

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Evans Valley Fire District #6 to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Evans Valley Fire District #6.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Evans Valley Fire District #6

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.32%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(10.19%)	(10.19%)	(10.19%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**12.69%**	**0.00%**	**4.59%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**13.18%**	**0.42%**	**5.01%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 127%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	8.95%	8.95%
Minimum 2019-2021 Rate	5.95%	2.95%
Maximum 2019-2021 Rate	11.95%	14.95%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$413,705	$290,144	($123,561)	143%	$90,266	(137%)
12/31/2012	463,790	306,995	(156,795)	151%	90,027	(174%)
12/31/2013	531,599	328,706	(202,893)	162%	84,680	(240%)
12/31/2014	562,525	400,896	(161,629)	140%	90,352	(179%)
12/31/2015	566,105	426,611	(139,494)	133%	95,709	(146%)
12/31/2016	595,923	469,811	(126,112)	127%	101,452	(124%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Evans Valley Fire District #6

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($126,112)	($139,494)
Allocated pooled OPSRP UAL	17,466	13,606
Side account	0	0
Net unfunded pension actuarial accrued liability	(108,646)	(125,888)
Combined valuation payroll	101,452	95,709
Net pension UAL as a percentage of payroll	(107%)	(132%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($14)	$465

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$12,397	$11,377
Tier 1/Tier 2 valuation payroll	58,151	55,536
Tier 1/Tier 2 pension normal cost rate	21.32%	20.49%
Tier 1/ Tier 2 Actuarial accrued liability	$469,811	$426,611
Actuarial asset value	595,923	566,105
Tier 1/Tier 2 Unfunded actuarial accrued liability	(126,112)	(139,494)
Tier 1/ Tier 2 Funded status	127%	133%
Combined valuation payroll	$101,452	$95,709
Tier 1/Tier 2 UAL as a percentage of payroll	(124%)	(146%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(10.19%)	(11.54%)
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	2	2

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	101,452	95,709
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$69,608	$66,047
2. Employer reserves	481,617	453,139
3. Benefits in force reserve	44,698	46,919
4. Total market value of assets ***(1. + 2. + 3.)***	**$595,923**	**$566,105**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$566,105
2.	Regular employer contributions	(3,529)
3.	Benefit payments and expenses	(8,752)
4.	Adjustments [1]	2,212
5.	Interest credited	39,887
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$595,923**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	12,397	11,377
Tier 2 General Service	0	0
Total	**$12,397**	**$11,377**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$11,958	$12,397	$439

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$30,351	$29,103
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	287,410	252,437
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$317,761**	**$281,540**
Dormant Members	46,488	43,765
Retired Members and Beneficiaries	105,562	101,306
Total Actuarial Accrued Liability	**$469,811**	**$426,611**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$458,289	$469,811	$11,522

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$469,811	$426,611
2. Actuarial value of assets	595,923	566,105
3. Unfunded accrued liability *(1. – 2.)*	(126,112)	(139,494)
4. Funded percentage *(2. ÷ 1.)*	127%	133%
5. Combined valuation payroll	$101,452	$95,709
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(124%)	(146%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($202,737)	($15,764)	($14,575)	($201,548)	($15,973)
December 31, 2015	$63,243	$4,576	$4,560	$63,227	$4,627
December 31, 2016	N/A	N/A	N/A	$12,209	$862
Total				**($126,112)**	**($10,484)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$426,611
b. Normal cost at December 31, 2015 (excluding assumed expenses)	10,851
c. Benefit payments during 2016	(8,678)
d. Interest at 7.50% to December 31, 2016	32,077
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	460,861
f. Change in actuarial accrued liability due to assumption, method, and plan changes	11,522
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	472,383
2. Actuarial accrued liability at December 31, 2016	469,811
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	2,572
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	566,105
b. Contributions for 2016[1]	(3,529)
c. Benefit payments and expenses during 2016	(8,752)
d. Interest at 7.50% to December 31, 2016	41,997
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	595,822
5. Actuarial value of assets at December 31, 2016	595,923
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	101
7. Total actuarial gain/(loss) *(3. + 6.)*	**$2,673**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($139,494)**
2. Expected increase	4,533
3. Liability (gain)/loss	(2,572)
4. Asset (gain)/loss	(101)
5. Change due to changes in assumptions, methods, and plan provisions	11,522
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($126,112)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	12,397	58,151	21.32%	11,377	55,536	20.49%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$12,397**	**$58,151**	**21.32%**	**$11,377**	**$55,536**	**20.49%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($126,112)	($139,494)
2. Next year's Tier 1/Tier 2 UAL payment	(10,484)	(11,188)
3. Combined valuation payroll	101,452	95,709
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(10.33%)	(11.69%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.32%	20.49%
b. Tier 1/Tier 2 UAL rate	(10.33%)	(11.69%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	11.13%	8.95%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	8.95%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	8.95%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.79%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	127%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	5.95%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	11.95%
7. Advisory July 1, 2019 total pension rate, before adjustment	11.13%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(10.33%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(10.33%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	11.13%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	21.32%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.32%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	11.13%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.32%	20.49%
b. Tier 1/Tier 2 UAL rate	(10.33%)	(11.69%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	11.13%	8.95%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	58,151	58,151
Tier 1/Tier 2 valuation payroll	0	58,151	58,151
OPSRP valuation payroll	0	43,301	43,301
Combined valuation payroll	**$0**	**$101,452**	**$101,452**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	1	1	2	0	1	1	2
Total	0	1	1	2	0	1	1	2
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	1	1	N/A	2	1	0	N/A	1
Total	1	1	N/A	2	1	0	N/A	1
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	1	0	1	0	1	0	1
Total	0	1	0	1	0	1	0	1
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	2	0	0	2	2	0	0	2
Total	2	0	0	2	2	0	0	2
Grand Total Number of Members	**3**	**3**	**1**	**7**	**3**	**2**	**1**	**6**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59				1						**1**
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	572
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total	1	572

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	2	270
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	2	270

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Fern Ridge Community Library/2785
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Fern Ridge Community Library/2785

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Fern Ridge Community Library/2785

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Fern Ridge Community Library -- #2785

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Fern Ridge Community Library to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Fern Ridge Community Library.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Fern Ridge Community Library

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	18.11%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(5.93%)	(5.93%)	(5.93%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**13.74%**	**4.12%**	**8.85%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**14.23%**	**4.54%**	**9.27%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 108%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	9.18%	9.18%
Minimum 2019-2021 Rate	6.18%	3.18%
Maximum 2019-2021 Rate	12.18%	15.18%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$368,747	$416,146	$47,399	89%	$185,052	26%
12/31/2012	421,995	461,969	39,974	91%	175,148	23%
12/31/2013	477,134	321,246	(155,888)	149%	181,171	(86%)
12/31/2014	502,692	369,684	(133,008)	136%	192,570	(69%)
12/31/2015	547,918	411,856	(136,062)	133%	126,701	(107%)
12/31/2016	466,914	433,268	(33,646)	108%	189,355	(18%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Fern Ridge Community Library

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($33,646)	($136,062)
Allocated pooled OPSRP UAL	32,600	18,012
Side account	0	0
Net unfunded pension actuarial accrued liability	(1,046)	(118,050)
Combined valuation payroll	189,355	126,701
Net pension UAL as a percentage of payroll	(1%)	(93%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($26)	$615

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$4,379	$4,216
Tier 1/Tier 2 valuation payroll	24,186	24,148
Tier 1/Tier 2 pension normal cost rate	18.11%	17.46%
Tier 1/ Tier 2 Actuarial accrued liability	$433,268	$411,856
Actuarial asset value	466,914	547,918
Tier 1/Tier 2 Unfunded actuarial accrued liability	(33,646)	(136,062)
Tier 1/ Tier 2 Funded status	108%	133%
Combined valuation payroll	$189,355	$126,701
Tier 1/Tier 2 UAL as a percentage of payroll	(18%)	(107%)
Tier 1/Tier 2 UAL rate	(5.93%)	(8.28%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	2	2
Tier 1/Tier 2 dormant members	2	2
Tier 1/Tier 2 retirees and beneficiaries	4	4

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	189,355	126,701
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$58,697	$55,526
2. Employer reserves	313,678	392,702
3. Benefits in force reserve	94,539	99,690
4. Total market value of assets ***(1. + 2. + 3.)***	**$466,914**	**$547,918**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$547,918
2.	Regular employer contributions	(3,823)
3.	Benefit payments and expenses	(18,510)
4.	Adjustments [1]	(91,940)
5.	Interest credited	33,270
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$466,914**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	4,379	4,216
Total	**$4,379**	**$4,216**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$4,404	$4,379	($25)

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	54,258	58,055
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	76,792	63,871
▪ **Total Active Members**	**$131,050**	**$121,926**
Dormant Members	78,950	74,680
Retired Members and Beneficiaries	223,268	215,250
Total Actuarial Accrued Liability	**$433,268**	**$411,856**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$425,819	$433,268	$7,449

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$433,268	$411,856
2. Actuarial value of assets	466,914	547,918
3. Unfunded accrued liability *(1. – 2.)*	(33,646)	(136,062)
4. Funded percentage *(2. ÷ 1.)*	108%	133%
5. Combined valuation payroll	$189,355	$126,701
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(18%)	(107%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($155,768)	($12,112)	($11,199)	($154,855)	($12,273)
December 31, 2015	$19,706	$1,426	$1,421	$19,701	$1,442
December 31, 2016	N/A	N/A	N/A	$101,508	$7,167
Total				**($33,646)**	**($3,664)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$411,856
b. Normal cost at December 31, 2015 (excluding assumed expenses)	4,021
c. Benefit payments during 2016	(18,355)
d. Interest at 7.50% to December 31, 2016	30,352
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	427,874
f. Change in actuarial accrued liability due to assumption, method, and plan changes	7,449
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	435,323
2. Actuarial accrued liability at December 31, 2016	433,268
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	2,055
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	547,918
b. Contributions for 2016[1]	(3,823)
c. Benefit payments and expenses during 2016	(18,510)
d. Interest at 7.50% to December 31, 2016	40,256
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	565,841
5. Actuarial value of assets at December 31, 2016	466,914
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(98,926)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($96,871)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($136,062)**
2. Expected increase	(1,904)
3. Liability (gain)/loss	(2,055)
4. Asset (gain)/loss	98,926
5. Change due to changes in assumptions, methods, and plan provisions	7,449
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**($33,646)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	4,379	24,186	18.11%	4,216	24,148	17.46%
Total	**$4,379**	**$24,186**	**18.11%**	**$4,216**	**$24,148**	**17.46%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($33,646)	($136,062)
2. Next year's Tier 1/Tier 2 UAL payment	(3,664)	(10,686)
3. Combined valuation payroll	189,355	126,701
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(1.93%)	(8.43%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.11%	17.46%
b. Tier 1/Tier 2 UAL rate	(1.93%)	(8.43%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	16.32%	9.18%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	9.18%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	9.18%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.84%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	108%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	6.18%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	12.18%
7. Advisory July 1, 2019 total pension rate, before adjustment	16.32%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(4.14%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(1.93%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(6.07%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	12.18%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	18.11%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	18.11%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	12.18%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.11%	17.46%
b. Tier 1/Tier 2 UAL rate	(6.07%)	(8.43%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	12.18%	9.18%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	24,186	0	24,186
Tier 1/Tier 2 valuation payroll	24,186	0	24,186
OPSRP valuation payroll	165,169	0	165,169
Combined valuation payroll	**$189,355**	**$0**	**$189,355**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	2	4	6	0	2	2	4
Police & Fire	0	0	0	0	0	0	0	0
Total	0	2	4	6	0	2	2	4
Active Members with previous service segments with the employer								
General Service	1	0	N/A	1	1	0	N/A	1
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	0	N/A	1	1	0	N/A	1
Dormant Members								
General Service	1	1	2	4	1	1	2	4
Police & Fire	0	0	0	0	0	0	0	0
Total	1	1	2	4	1	1	2	4
Retired Members and Beneficiaries								
General Service	4	0	0	4	4	0	0	4
Police & Fire	0	0	0	0	0	0	0	0
Total	4	0	0	4	4	0	0	4
Grand Total Number of Members	**6**	**3**	**6**	**15**	**6**	**3**	**4**	**13**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64				1						**1**
65-69										
70-74				1						**1**
75+										
Total	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	642
45-49		
50-54		
55-59	1	285
60-64		
65-69		
70-74		
75+		
Total	2	464

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	1
60-64		
65-69	1	877
70-74	1	299
75-79	1	192
80-84		
85-89		
90-94		
95-99		
100+		
Total	4	342

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Gaston Rural Fire Protection District/2608
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Gaston Rural Fire Protection District/2608

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Gaston Rural Fire Protection District/2608

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Gaston Rural Fire Protection District -- #2608

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Gaston Rural Fire Protection District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Gaston Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Gaston Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.71%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	3.58%	3.58%	3.58%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**21.85%**	**13.63%**	**18.36%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**22.34%**	**14.05%**	**18.78%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 82%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.91%	16.91%
Minimum 2019-2021 Rate	13.53%	10.15%
Maximum 2019-2021 Rate	20.29%	23.67%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$330,317	$371,521	$41,204	89%	$100,398	41%
12/31/2012	365,393	380,080	14,687	96%	101,729	14%
12/31/2013	402,978	416,448	13,470	97%	108,497	12%
12/31/2014	408,532	484,761	76,229	84%	108,279	70%
12/31/2015	400,926	502,365	101,438	80%	142,046	71%
12/31/2016	414,112	506,170	92,058	82%	166,430	55%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Gaston Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$92,058	$101,439
Allocated pooled OPSRP UAL	28,653	20,194
Side account	0	0
Net unfunded pension actuarial accrued liability	120,711	121,633
Combined valuation payroll	166,430	142,046
Net pension UAL as a percentage of payroll	73%	86%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($23)	$690

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$66	$141
Tier 1/Tier 2 valuation payroll	395	1,025
Tier 1/Tier 2 pension normal cost rate	16.71%	13.76%
Tier 1/ Tier 2 Actuarial accrued liability	$506,170	$502,365
Actuarial asset value	414,112	400,927
Tier 1/Tier 2 Unfunded actuarial accrued liability	92,058	101,439
Tier 1/ Tier 2 Funded status	82%	80%
Combined valuation payroll	$166,430	$142,046
Tier 1/Tier 2 UAL as a percentage of payroll	55%	71%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	3.58%	3.15%
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	2	2

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	166,430	142,046
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$50,368	$47,622
2. Employer reserves	265,143	246,226
3. Benefits in force reserve	98,601	107,079
4. Total market value of assets ***(1. + 2. + 3.)***	**$414,112**	**$400,927**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$400,927
2. Regular employer contributions	1,399
3. Benefit payments and expenses	(19,306)
4. Adjustments [1]	3,039
5. Interest credited	28,053
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$414,112**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$10	$43
Tier 1 General Service	0	0
Tier 2 Police & Fire	56	98
Tier 2 General Service	0	0
Total	**$66**	**$141**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$63	$66	$3

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$203,608	$209,787
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	31,128	27,042
▪ Tier 2 General Service	36,655	32,542
▪ **Total Active Members**	**$271,391**	**$269,371**
Dormant Members	1,918	1,790
Retired Members and Beneficiaries	232,861	231,204
Total Actuarial Accrued Liability	**$506,170**	**$502,365**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$495,848	$506,170	$10,322

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$506,170	$502,365
2. Actuarial value of assets	414,112	400,927
3. Unfunded accrued liability *(1. – 2.)*	92,058	101,439
4. Funded percentage *(2. ÷ 1.)*	82%	80%
5. Combined valuation payroll	$166,430	$142,046
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	55%	71%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$13,459	$1,046	$968	$13,381	$1,060
December 31, 2015	$87,980	$6,366	$6,344	$87,958	$6,436
December 31, 2016	N/A	N/A	N/A	($9,281)	($655)
Total				**$92,058**	**$6,841**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$502,365
b. Normal cost at December 31, 2015 (excluding assumed expenses)	141
c. Benefit payments during 2016	(19,143)
d. Interest at 7.50% to December 31, 2016	36,965
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	520,328
f. Change in actuarial accrued liability due to assumption, method, and plan changes	10,322
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	530,650
2. Actuarial accrued liability at December 31, 2016	506,170
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	24,480
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	400,927
b. Contributions for 2016[1]	1,399
c. Benefit payments and expenses during 2016	(19,306)
d. Interest at 7.50% to December 31, 2016	29,398
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	412,418
5. Actuarial value of assets at December 31, 2016	414,112
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	1,694
7. Total actuarial gain/(loss) *(3. + 6.)*	**$26,174**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$101,439**
2. Expected increase	6,471
3. Liability (gain)/loss	(24,480)
4. Asset (gain)/loss	(1,694)
5. Change due to changes in assumptions, methods, and plan provisions	10,322
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$92,058**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$10	$52	19.23%	$43	$245	17.55%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	56	343	16.33%	98	780	12.56%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$66**	**$395**	**16.71%**	**$141**	**$1,025**	**13.76%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$92,058	$101,439
2. Next year's Tier 1/Tier 2 UAL payment	6,841	7,412
3. Combined valuation payroll	166,430	142,046
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	4.11%	5.22%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.71%	13.76%
b. Tier 1/Tier 2 UAL rate	4.11%	5.22%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	20.96%	19.13%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.91%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.91%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.38%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.38%
c. Funded percentage	82%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.38%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.53%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	20.29%
7. Advisory July 1, 2019 total pension rate, before adjustment	20.96%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.67%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	4.11%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.44%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	20.29%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.71%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.71%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	20.29%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.71%	13.76%
b. Tier 1/Tier 2 UAL rate	3.44%	3.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	20.29%	16.91%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$52	$52
Tier 2	0	343	343
Tier 1/Tier 2 valuation payroll	0	395	395
OPSRP valuation payroll	25,304	140,731	166,035
Combined valuation payroll	**$25,304**	**$141,126**	**$166,430**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	1	1
Police & Fire	0	0	4	4	0	0	3	3
Total	0	0	4	4	0	0	4	4
Active Members with previous service segments with the employer								
General Service	1	1	N/A	2	1	1	N/A	2
Police & Fire	5	4	N/A	9	4	3	N/A	7
Total	6	5	N/A	11	5	4	N/A	9
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	1	0	1	0	1	0	1
Total	0	1	0	1	0	1	0	1
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	2	0	0	2	2	0	0	2
Total	2	0	0	2	2	0	0	2
Grand Total Number of Members	**8**	**6**	**4**	**18**	**7**	**5**	**4**	**16**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59	1	160
60-64		
65-69		
70-74		
75+		
Total	1	160

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69	1	163
70-74		
75-79		
80-84		
85-89	1	2,216
90-94		
95-99		
100+		
Total	2	1,190

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Halsey Shedd Rural Fire Protection District/2698
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Halsey Shedd Rural Fire Protection District/2698

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Halsey Shedd Rural Fire Protection District -- #2698

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Halsey Shedd Rural Fire Protection District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Halsey Shedd Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Halsey Shedd Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	14.01%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(2.56%)	(2.56%)	(2.56%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**13.01%**	**7.49%**	**12.22%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**13.50%**	**7.91%**	**12.64%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 102%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.38%	11.38%
Minimum 2019-2021 Rate	8.38%	5.38%
Maximum 2019-2021 Rate	14.38%	17.38%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$547,694	$449,945	($97,749)	122%	$108,670	(90%)
12/31/2012	613,020	480,877	(132,143)	127%	139,713	(95%)
12/31/2013	698,072	521,710	(176,362)	134%	144,016	(122%)
12/31/2014	742,316	639,782	(102,534)	116%	148,848	(69%)
12/31/2015	761,391	684,803	(76,588)	111%	153,442	(50%)
12/31/2016	809,678	797,508	(12,170)	102%	78,552	(15%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Halsey Shedd Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($12,170)	($76,588)
Allocated pooled OPSRP UAL	13,524	21,814
Side account	0	0
Net unfunded pension actuarial accrued liability	1,354	(54,774)
Combined valuation payroll	78,552	153,442
Net pension UAL as a percentage of payroll	2%	(36%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($11)	$745

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$2,546	$19,571
Tier 1/Tier 2 valuation payroll	18,178	94,438
Tier 1/Tier 2 pension normal cost rate	14.01%	20.72%
Tier 1/ Tier 2 Actuarial accrued liability	$797,508	$684,803
Actuarial asset value	809,678	761,391
Tier 1/Tier 2 Unfunded actuarial accrued liability	(12,170)	(76,588)
Tier 1/ Tier 2 Funded status	102%	111%
Combined valuation payroll	$78,552	$153,442
Tier 1/Tier 2 UAL as a percentage of payroll	(15%)	(50%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(2.56%)	(9.34%)
Tier 1/Tier 2 active members [1]	1	2
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	2	2

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	78,552	153,442
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$186,555	$176,956
2. Employer reserves	577,033	535,846
3. Benefits in force reserve	46,090	48,589
4. Total market value of assets *(1. + 2. + 3.)*	**$809,678**	**$761,391**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$761,391
2. Regular employer contributions	2,871
3. Benefit payments and expenses	(9,024)
4. Adjustments [1]	(226)
5. Interest credited	54,666
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$809,678**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Tier 1 Police & Fire	$0	$17,233
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	2,546	2,338
Total	**$2,546**	**$19,571**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$2,490	$2,546	$56

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$527,157
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	6,708	0
▪ Tier 2 General Service	55,773	46,510
▪ **Total Active Members**	**$62,481**	**$573,667**
Dormant Members	626,179	6,222
Retired Members and Beneficiaries	108,848	104,914
Total Actuarial Accrued Liability	**$797,508**	**$684,803**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$775,032	$797,508	$22,476

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$797,508	$684,803
2. Actuarial value of assets	809,678	761,391
3. Unfunded accrued liability *(1. – 2.)*	(12,170)	(76,588)
4. Funded percentage *(2. ÷ 1.)*	102%	111%
5. Combined valuation payroll	$78,552	$153,442
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(15%)	(50%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($176,225)	($13,702)	($12,669)	($175,192)	($13,884)
December 31, 2015	$99,637	$7,210	$7,185	$99,612	$7,289
December 31, 2016	N/A	N/A	N/A	$63,410	$4,477
Total				**($12,170)**	**($2,118)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$684,803
b. Normal cost at December 31, 2015 (excluding assumed expenses)	18,666
c. Benefit payments during 2016	(8,948)
d. Interest at 7.50% to December 31, 2016	51,725
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	746,246
f. Change in actuarial accrued liability due to assumption, method, and plan changes	22,476
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	768,722
2. Actuarial accrued liability at December 31, 2016	797,508
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(28,786)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	761,391
b. Contributions for 2016[1]	2,871
c. Benefit payments and expenses during 2016	(9,024)
d. Interest at 7.50% to December 31, 2016	56,874
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	812,112
5. Actuarial value of assets at December 31, 2016	809,678
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(2,434)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($31,220)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($76,588)**
2. Expected increase	10,722
3. Liability (gain)/loss	28,786
4. Asset (gain)/loss	2,434
5. Change due to changes in assumptions, methods, and plan provisions	22,476
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($12,170)**

1 *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$17,233	$76,799	22.44%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	2,546	18,178	14.01%	2,338	17,639	13.25%
Total	**$2,546**	**$18,178**	**14.01%**	**$19,571**	**$94,438**	**20.72%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($12,170)	($76,588)
2. Next year's Tier 1/Tier 2 UAL payment	(2,118)	(6,492)
3. Combined valuation payroll	78,552	153,442
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(2.70%)	(4.23%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.01%	20.72%
b. Tier 1/Tier 2 UAL rate	(2.70%)	(4.23%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	11.45%	16.64%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	11.38%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.38%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.28%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	102%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	8.38%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	14.38%
7. Advisory July 1, 2019 total pension rate, before adjustment	11.45%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(2.70%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(2.70%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	11.45%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	14.01%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	14.01%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	11.45%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.01%	20.72%
b. Tier 1/Tier 2 UAL rate	(2.70%)	(9.49%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	11.45%	11.38%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	18,178	0	18,178
Tier 1/Tier 2 valuation payroll	18,178	0	18,178
OPSRP valuation payroll	0	60,374	60,374
Combined valuation payroll	**$18,178**	**$60,374**	**$78,552**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	0	1	0	1	0	1
Police & Fire	0	0	1	1	1	0	1	2
Total	0	1	1	2	1	1	1	3
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	1	N/A	1	0	0	N/A	0
Total	0	1	N/A	1	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	1	0	0	1	0	1	0	1
Total	1	0	0	1	0	1	0	1
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	2	0	0	2	2	0	0	2
Total	2	0	0	2	2	0	0	2
Grand Total Number of Members	**3**	**2**	**1**	**6**	**3**	**2**	**1**	**6**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54				1						**1**
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59	1	3,503
60-64		
65-69		
70-74		
75+		
Total	1	3,503

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74	2	288
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	2	288

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Harbor Water PUD/2771
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Harbor Water PUD/2771

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Harbor Water PUD/2771

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Harbor Water PUD -- #2771

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Harbor Water PUD to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Harbor Water PUD.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Harbor Water PUD

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	18.77%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(3.73%)	(3.73%)	(3.73%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**16.60%**	**6.32%**	**11.05%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**17.09%**	**6.74%**	**11.47%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 111%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	12.04%	12.04%
Minimum 2019-2021 Rate	9.04%	6.04%
Maximum 2019-2021 Rate	15.04%	18.04%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$685,356	$635,506	($49,850)	108%	$241,212	(21%)
12/31/2012	796,837	667,827	(129,010)	119%	285,733	(45%)
12/31/2013	919,744	695,744	(224,000)	132%	291,782	(77%)
12/31/2014	991,048	820,895	(170,153)	121%	327,589	(52%)
12/31/2015	1,030,209	916,708	(113,501)	112%	385,126	(29%)
12/31/2016	1,114,188	1,001,585	(112,603)	111%	375,682	(30%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Harbor Water PUD

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($112,603)	($113,501)
Allocated pooled OPSRP UAL	64,678	54,751
Side account	0	0
Net unfunded pension actuarial accrued liability	(47,925)	(58,750)
Combined valuation payroll	375,682	385,126
Net pension UAL as a percentage of payroll	(13%)	(15%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($51)	$1,870

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$45,054	$42,764
Tier 1/Tier 2 valuation payroll	240,064	237,799
Tier 1/Tier 2 pension normal cost rate	18.77%	17.98%
Tier 1/ Tier 2 Actuarial accrued liability	$1,001,585	$916,708
Actuarial asset value	1,114,188	1,030,209
Tier 1/Tier 2 Unfunded actuarial accrued liability	(112,603)	(113,501)
Tier 1/ Tier 2 Funded status	111%	112%
Combined valuation payroll	$375,682	$385,126
Tier 1/Tier 2 UAL as a percentage of payroll	(30%)	(29%)
Tier 1/Tier 2 UAL rate	(3.73%)	(5.94%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	1	1

1 *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	375,682	385,126
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$288,860	$273,741
2. Employer reserves	802,940	732,686
3. Benefits in force reserve	22,388	23,781
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,114,188**	**$1,030,209**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$1,030,209
2.	Regular employer contributions	17,102
3.	Benefit payments and expenses	(4,383)
4.	Adjustments [1]	(3,774)
5.	Interest credited	75,034
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,114,188**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	32,025	31,174
Tier 2 Police & Fire	0	0
Tier 2 General Service	13,029	11,590
Total	**$45,054**	**$42,764**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$44,185	$45,054	$869

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	740,884	694,558
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	207,830	170,802
▪ **Total Active Members**	**$948,714**	**$865,360**
Dormant Members	0	0
Retired Members and Beneficiaries	52,871	51,348
Total Actuarial Accrued Liability	**$1,001,585**	**$916,708**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$974,024	$1,001,585	$27,561

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,001,585	$916,708
2. Actuarial value of assets	1,114,188	1,030,209
3. Unfunded accrued liability *(1. – 2.)*	(112,603)	(113,501)
4. Funded percentage *(2. ÷ 1.)*	111%	112%
5. Combined valuation payroll	$375,682	$385,126
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(30%)	(29%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($223,827)	($17,404)	($16,092)	($222,515)	($17,635)
December 31, 2015	$110,326	$7,983	$7,956	$110,299	$8,071
December 31, 2016	N/A	N/A	N/A	($387)	($27)
Total				**($112,603)**	**($9,591)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$916,708
b. Normal cost at December 31, 2015 (excluding assumed expenses)	40,786
c. Benefit payments during 2016	(4,346)
d. Interest at 7.50% to December 31, 2016	70,120
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,023,268
f. Change in actuarial accrued liability due to assumption, method, and plan changes	27,561
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,050,829
2. Actuarial accrued liability at December 31, 2016	1,001,585
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	49,244
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,030,209
b. Contributions for 2016[1]	17,102
c. Benefit payments and expenses during 2016	(4,383)
d. Interest at 7.50% to December 31, 2016	77,743
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,120,670
5. Actuarial value of assets at December 31, 2016	1,114,188
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(6,482)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$42,762**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($113,501)**
2. Expected increase	16,099
3. Liability (gain)/loss	(49,244)
4. Asset (gain)/loss	6,482
5. Change due to changes in assumptions, methods, and plan provisions	27,561
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($112,603)**

1 *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	32,025	158,881	20.16%	31,174	164,315	18.97%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	13,029	81,183	16.05%	11,590	73,484	15.77%
Total	**$45,054**	**$240,064**	**18.77%**	**$42,764**	**$237,799**	**17.98%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($112,603)	($113,501)
2. Next year's Tier 1/Tier 2 UAL payment	(9,591)	(9,421)
3. Combined valuation payroll	375,682	385,126
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(2.55%)	(2.45%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.77%	17.98%
b. Tier 1/Tier 2 UAL rate	(2.55%)	(2.45%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	16.36%	15.68%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	12.04%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	12.04%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.41%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	111%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	9.04%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	15.04%
7. Advisory July 1, 2019 total pension rate, before adjustment	16.36%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(1.32%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(2.55%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(3.87%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	15.04%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	18.77%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	18.77%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	15.04%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.77%	17.98%
b. Tier 1/Tier 2 UAL rate	(3.87%)	(6.09%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	15.04%	12.04%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$158,881	$0	$158,881
Tier 2	81,183	0	81,183
Tier 1/Tier 2 valuation payroll	240,064	0	240,064
OPSRP valuation payroll	135,618	0	135,618
Combined valuation payroll	**$375,682**	**$0**	**$375,682**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	1	2	5	2	1	3	6
Police & Fire	0	0	0	0	0	0	0	0
Total	2	1	2	5	2	1	3	6
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	1	0	1	0	1	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	1	0	1
Grand Total Number of Members	**2**	**2**	**2**	**6**	**2**	**2**	**3**	**7**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59					1					**1**
60-64			1							**1**
65-69					1					**1**
70-74										
75+										
Total	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**3**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69	1	371
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	1	371

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Ice Fountain Water District/2717
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Ice Fountain Water District/2717

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Ice Fountain Water District -- #2717

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Ice Fountain Water District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Ice Fountain Water District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Ice Fountain Water District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	14.69%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	3.02%	3.02%	3.02%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**19.27%**	**13.07%**	**17.80%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**19.76%**	**13.49%**	**18.22%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 81%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	14.71%	14.71%
Minimum 2019-2021 Rate	11.71%	8.71%
Maximum 2019-2021 Rate	17.71%	20.71%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$636,512	$704,868	$68,356	90%	$223,782	31%
12/31/2012	708,964	738,703	29,739	96%	236,893	13%
12/31/2013	794,979	776,808	(18,171)	102%	206,630	(9%)
12/31/2014	820,816	897,711	76,895	91%	305,250	25%
12/31/2015	823,241	960,165	136,924	86%	331,215	41%
12/31/2016	864,942	1,071,187	206,245	81%	348,153	59%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Ice Fountain Water District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$206,245	$136,924
Allocated pooled OPSRP UAL	59,939	47,087
Side account	0	0
Net unfunded pension actuarial accrued liability	266,184	184,011
Combined valuation payroll	348,153	331,215
Net pension UAL as a percentage of payroll	76%	56%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($47)	$1,608

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$17,893	$16,505
Tier 1/Tier 2 valuation payroll	121,782	112,130
Tier 1/Tier 2 pension normal cost rate	14.69%	14.72%
Tier 1/ Tier 2 Actuarial accrued liability	$1,071,187	$960,165
Actuarial asset value	864,942	823,241
Tier 1/Tier 2 Unfunded actuarial accrued liability	206,245	136,924
Tier 1/ Tier 2 Funded status	81%	86%
Combined valuation payroll	$348,153	$331,215
Tier 1/Tier 2 UAL as a percentage of payroll	59%	41%
Tier 1/Tier 2 UAL rate	3.02%	(0.01%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	3	3

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	348,153	331,215
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$126,377	$119,566
2. Employer reserves	543,879	496,026
3. Benefits in force reserve	194,686	207,650
4. Total market value of assets ***(1. + 2. + 3.)***	**$864,942**	**$823,241**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$823,241
2.	Regular employer contributions	11,968
3.	Benefit payments and expenses	(38,118)
4.	Adjustments [1]	9,252
5.	Interest credited	58,599
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$864,942**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	17,893	16,505
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$17,893**	**$16,505**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$17,783	$17,893	$110

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	611,408	511,809
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$611,408**	**$511,809**
Dormant Members	0	0
Retired Members and Beneficiaries	459,779	448,356
Total Actuarial Accrued Liability	**$1,071,187**	**$960,165**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,045,331	$1,071,187	$25,856

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,071,187	$960,165
2. Actuarial value of assets	864,942	823,241
3. Unfunded accrued liability *(1. – 2.)*	206,245	136,924
4. Funded percentage *(2. ÷ 1.)*	81%	86%
5. Combined valuation payroll	$348,153	$331,215
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	59%	41%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($18,157)	($1,412)	($1,305)	($18,050)	($1,430)
December 31, 2015	$155,081	$11,221	$11,183	$155,043	$11,345
December 31, 2016	N/A	N/A	N/A	$69,252	$4,890
Total				**$206,245**	**$14,805**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$960,165
b. Normal cost at December 31, 2015 (excluding assumed expenses)	15,741
c. Benefit payments during 2016	(37,798)
d. Interest at 7.50% to December 31, 2016	71,185
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,009,293
f. Change in actuarial accrued liability due to assumption, method, and plan changes	25,856
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,035,149
2. Actuarial accrued liability at December 31, 2016	1,071,187
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(36,038)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	823,241
b. Contributions for 2016[1]	11,968
c. Benefit payments and expenses during 2016	(38,118)
d. Interest at 7.50% to December 31, 2016	60,762
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	857,853
5. Actuarial value of assets at December 31, 2016	864,942
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	7,088
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($28,950)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$136,924**
2. Expected increase	14,515
3. Liability (gain)/loss	36,038
4. Asset (gain)/loss	(7,088)
5. Change due to changes in assumptions, methods, and plan provisions	25,856
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$206,245**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	17,893	121,782	14.69%	16,505	112,130	14.72%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$17,893**	**$121,782**	**14.69%**	**$16,505**	**$112,130**	**14.72%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$206,245	$136,924
2. Next year's Tier 1/Tier 2 UAL payment	14,805	9,809
3. Combined valuation payroll	348,153	331,215
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	4.25%	2.96%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.69%	14.72%
b. Tier 1/Tier 2 UAL rate	4.25%	2.96%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	19.08%	17.83%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	14.71%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	14.71%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.94%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	81%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	11.71%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	17.71%
7. Advisory July 1, 2019 total pension rate, before adjustment	19.08%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(1.37%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	4.25%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	2.88%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	17.71%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	14.69%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	14.69%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.71%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.69%	14.72%
b. Tier 1/Tier 2 UAL rate	2.88%	(0.16%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	17.71%	14.71%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$121,782	$0	$121,782
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	121,782	0	121,782
OPSRP valuation payroll	226,371	0	226,371
Combined valuation payroll	**$348,153**	**$0**	**$348,153**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	4	5	1	0	4	5
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	4	5	1	0	4	5
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	3	0	0	3	3	0	0	3
Police & Fire	0	0	0	0	0	0	0	0
Total	3	0	0	3	3	0	0	3
Grand Total Number of Members	**4**	**0**	**4**	**8**	**4**	**0**	**4**	**8**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49					1					**1**
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69	2	1,486
70-74		
75-79		
80-84	1	441
85-89		
90-94		
95-99		
100+		
Total	3	1,138

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Jackson County Fire District #5/2556
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Jackson County Fire District #5/2556

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Jackson County Fire District #5 -- #2556

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Jackson County Fire District #5 to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Jackson County Fire District #5.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Jackson County Fire District #5

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.27%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	11.83%	11.83%	11.83%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**34.66%**	**21.88%**	**26.61%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**35.15%**	**22.30%**	**27.03%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 60%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	23.64%	23.64%
Minimum 2019-2021 Rate	18.91%	14.18%
Maximum 2019-2021 Rate	28.37%	33.10%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$11,630,678	$14,920,503	$3,289,825	78%	$2,094,912	157%
12/31/2012	12,643,144	15,114,250	2,471,106	84%	2,256,324	110%
12/31/2013	14,169,543	15,674,310	1,504,767	90%	2,407,905	62%
12/31/2014	14,840,834	18,877,511	4,036,677	79%	2,255,075	179%
12/31/2015	13,145,707	19,673,311	6,527,604	67%	2,380,009	274%
12/31/2016	12,861,177	21,512,665	8,651,488	60%	2,371,618	365%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Jackson County Fire District #5

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$8,651,488	$6,527,604
Allocated pooled OPSRP UAL	408,303	338,351
Side account	0	0
Net unfunded pension actuarial accrued liability	9,059,791	6,865,955
Combined valuation payroll	2,371,618	2,380,009
Net pension UAL as a percentage of payroll	382%	288%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($323)	$11,557

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$213,512	$226,088
Tier 1/Tier 2 valuation payroll	1,003,862	1,106,663
Tier 1/Tier 2 pension normal cost rate	21.27%	20.43%
Tier 1/ Tier 2 Actuarial accrued liability	$21,512,665	$19,673,311
Actuarial asset value	12,861,177	13,145,707
Tier 1/Tier 2 Unfunded actuarial accrued liability	8,651,488	6,527,604
Tier 1/ Tier 2 Funded status	60%	67%
Combined valuation payroll	$2,371,618	$2,380,009
Tier 1/Tier 2 UAL as a percentage of payroll	365%	274%
Tier 1/Tier 2 UAL rate	11.83%	3.21%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	10	11
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	28	28

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	2,371,618	2,380,009
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$894,294	$1,052,518
2. Employer reserves	5,111,514	5,586,888
3. Benefits in force reserve	6,855,370	6,506,301
4. Total market value of assets ***(1. + 2. + 3.)***	**$12,861,177**	**$13,145,707**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$13,145,707
2.	Regular employer contributions	250,330
3.	Benefit payments and expenses	(1,342,247)
4.	Adjustments [1]	(147,256)
5.	Interest credited	954,643
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$12,861,177**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$75,969	$96,129
Tier 1 General Service	0	0
Tier 2 Police & Fire	137,543	129,959
Tier 2 General Service	0	0
Total	**$213,512**	**$226,088**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$205,797	$213,512	$7,715

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$2,855,367	$3,474,818
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	2,332,797	2,031,333
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$5,188,164**	**$5,506,151**
Dormant Members	134,520	118,812
Retired Members and Beneficiaries	16,189,981	14,048,348
Total Actuarial Accrued Liability	**$21,512,665**	**$19,673,311**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$20,941,729	$21,512,665	$570,936

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$21,512,665	$19,673,311
2. Actuarial value of assets	12,861,177	13,145,707
3. Unfunded accrued liability *(1. – 2.)*	8,651,488	6,527,604
4. Funded percentage *(2. ÷ 1.)*	60%	67%
5. Combined valuation payroll	$2,371,618	$2,380,009
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	365%	274%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$1,503,607	$116,912	$108,100	$1,494,795	$118,465
December 31, 2015	$5,023,997	$363,531	$362,276	$5,022,742	$367,536
December 31, 2016	N/A	N/A	N/A	$2,133,951	$150,671
Total				**$8,651,488**	**$636,672**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$19,673,311
b. Normal cost at December 31, 2015 (excluding assumed expenses)	215,608
c. Benefit payments during 2016	(1,330,960)
d. Interest at 7.50% to December 31, 2016	1,433,673
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	19,991,632
f. Change in actuarial accrued liability due to assumption, method, and plan changes	570,936
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	20,562,568
2. Actuarial accrued liability at December 31, 2016	21,512,665
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(950,097)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	13,145,707
b. Contributions for 2016[1]	250,330
c. Benefit payments and expenses during 2016	(1,342,247)
d. Interest at 7.50% to December 31, 2016	944,981
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	12,998,771
5. Actuarial value of assets at December 31, 2016	12,861,177
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(137,594)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($1,087,691)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$6,527,604**
2. Expected increase	465,257
3. Liability (gain)/loss	950,097
4. Asset (gain)/loss	137,594
5. Change due to changes in assumptions, methods, and plan provisions	570,936
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$8,651,488**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$75,969	$298,146	25.48%	$96,129	$407,314	23.60%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	137,543	705,716	19.49%	129,959	699,349	18.58%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$213,512**	**$1,003,862**	**21.27%**	**$226,088**	**$1,106,663**	**20.43%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$8,651,488	$6,527,604
2. Next year's Tier 1/Tier 2 UAL payment	636,672	480,443
3. Combined valuation payroll	2,371,618	2,380,009
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	26.85%	20.19%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.27%	20.43%
b. Tier 1/Tier 2 UAL rate	26.85%	20.19%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	48.26%	40.77%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	23.64%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	23.64%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	4.73%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.73%
c. Funded percentage	60%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	9.46%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	14.18%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	33.10%
7. Advisory July 1, 2019 total pension rate, before adjustment	48.26%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(15.16%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	26.85%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	11.69%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	33.10%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	21.27%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.27%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	33.10%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.27%	20.43%
b. Tier 1/Tier 2 UAL rate	11.69%	3.06%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	33.10%	23.64%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$298,146	$298,146
Tier 2	0	705,716	705,716
Tier 1/Tier 2 valuation payroll	0	1,003,862	1,003,862
OPSRP valuation payroll	15,006	1,352,750	1,367,756
Combined valuation payroll	**$15,006**	**$2,356,612**	**$2,371,618**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	1	1	0	0	1	1
Police & Fire	3	7	15	25	4	7	15	26
Total	3	7	16	26	4	7	16	27
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	1	1	N/A	2	1	1	N/A	2
Total	1	1	N/A	2	1	1	N/A	2
Dormant Members								
General Service	0	0	1	1	0	0	0	0
Police & Fire	0	1	0	1	0	1	0	1
Total	0	1	1	2	0	1	0	1
Retired Members and Beneficiaries								
General Service	3	0	0	3	4	0	0	4
Police & Fire	24	1	0	25	21	3	0	24
Total	27	1	0	28	25	3	0	28
Grand Total Number of Members	**31**	**10**	**17**	**58**	**30**	**12**	**16**	**58**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44				2						**2**
45-49			2	2						**4**
50-54				1						**1**
55-59					1	1		1		**3**
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**2**	**5**	**1**	**1**	**0**	**1**	**0**	**10**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	1,346
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total	1	1,346

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	1	845
45-49		
50-54	1	8,502
55-59	7	3,038
60-64	5	4,643
65-69	9	2,936
70-74	4	2,671
75-79	1	2,649
80-84		
85-89		
90-94		
95-99		
100+		
Total	28	3,343

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Jefferson County Rural Fire Protection District #1/2575
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Jefferson County Rural Fire Protection District #1/2575

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Jefferson County Rural Fire Protection District #1 -- #2575

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Jefferson County Rural Fire Protection District #1 to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Jefferson County Rural Fire Protection District #1.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Jefferson County Rural Fire Protection District #1

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	15.60%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	3.67%	3.67%	3.67%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**20.83%**	**13.72%**	**18.45%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**21.32%**	**14.14%**	**18.87%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 77%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.06%	16.06%
Minimum 2019-2021 Rate	12.85%	9.64%
Maximum 2019-2021 Rate	19.27%	22.48%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,590,509	$1,837,042	$246,533	87%	$304,654	81%
12/31/2012	1,740,658	1,800,503	59,845	97%	300,941	20%
12/31/2013	1,872,829	1,921,988	49,159	97%	298,613	16%
12/31/2014	1,945,969	2,295,670	349,701	85%	310,549	113%
12/31/2015	1,748,017	2,189,466	441,449	80%	331,004	133%
12/31/2016	1,770,443	2,297,998	527,555	77%	432,491	122%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Jefferson County Rural Fire Protection District #1

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$527,555	$441,449
Allocated pooled OPSRP UAL	74,459	47,057
Side account	0	0
Net unfunded pension actuarial accrued liability	602,014	488,506
Combined valuation payroll	432,491	331,004
Net pension UAL as a percentage of payroll	139%	148%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($59)	$1,607

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$10,866	$10,200
Tier 1/Tier 2 valuation payroll	69,668	68,718
Tier 1/Tier 2 pension normal cost rate	15.60%	14.84%
Tier 1/ Tier 2 Actuarial accrued liability	$2,297,998	$2,189,466
Actuarial asset value	1,770,443	1,748,017
Tier 1/Tier 2 Unfunded actuarial accrued liability	527,555	441,449
Tier 1/ Tier 2 Funded status	77%	80%
Combined valuation payroll	$432,491	$331,004
Tier 1/Tier 2 UAL as a percentage of payroll	122%	133%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	3.67%	1.22%
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	1	2
Tier 1/Tier 2 retirees and beneficiaries	6	6

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	432,491	331,004
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$66,895	$63,289
2. Employer reserves	897,802	826,408
3. Benefits in force reserve	805,746	858,320
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,770,443**	**$1,748,017**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$1,748,017
2. Regular employer contributions	11,956
3. Benefit payments and expenses	(157,761)
4. Adjustments [1]	48,200
5. Interest credited	120,032
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,770,443**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	10,866	10,200
Tier 2 General Service	0	0
Total	**$10,866**	**$10,200**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$10,426	$10,866	$440

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	24,536	0
▪ Tier 2 Police & Fire	191,917	167,105
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$216,453**	**$167,105**
Dormant Members	178,655	169,084
Retired Members and Beneficiaries	1,902,890	1,853,277
Total Actuarial Accrued Liability	**$2,297,998**	**$2,189,466**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,233,572	$2,297,998	$64,426

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$2,297,998	$2,189,466
2. Actuarial value of assets	1,770,443	1,748,017
3. Unfunded accrued liability *(1. – 2.)*	527,555	441,449
4. Funded percentage *(2. ÷ 1.)*	77%	80%
5. Combined valuation payroll	$432,491	$331,004
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	122%	133%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$49,121	$3,819	$3,532	$48,834	$3,870
December 31, 2015	$392,328	$28,388	$28,290	$392,230	$28,701
December 31, 2016	N/A	N/A	N/A	$86,491	$6,107
Total				**$527,555**	**$38,678**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$2,189,466
b. Normal cost at December 31, 2015 (excluding assumed expenses)	9,728
c. Benefit payments during 2016	(156,434)
d. Interest at 7.50% to December 31, 2016	158,708
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,201,468
f. Change in actuarial accrued liability due to assumption, method, and plan changes	64,426
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	2,265,894
2. Actuarial accrued liability at December 31, 2016	2,297,998
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(32,104)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,748,017
b. Contributions for 2016[1]	11,956
c. Benefit payments and expenses during 2016	(157,761)
d. Interest at 7.50% to December 31, 2016	125,634
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,727,845
5. Actuarial value of assets at December 31, 2016	1,770,443
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	42,598
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$10,494**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$441,449**
2. Expected increase	32,174
3. Liability (gain)/loss	32,104
4. Asset (gain)/loss	(42,598)
5. Change due to changes in assumptions, methods, and plan provisions	64,426
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$527,555**

1 *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	10,866	69,668	15.60%	10,200	68,718	14.84%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$10,866**	**$69,668**	**15.60%**	**$10,200**	**$68,718**	**14.84%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$527,555	$441,449
2. Next year's Tier 1/Tier 2 UAL payment	38,678	32,207
3. Combined valuation payroll	432,491	331,004
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	8.94%	9.73%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.60%	14.84%
b. Tier 1/Tier 2 UAL rate	8.94%	9.73%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	24.68%	24.72%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.06%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.06%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.21%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.21%
c. Funded percentage	77%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.21%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	12.85%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	19.27%
7. Advisory July 1, 2019 total pension rate, before adjustment	24.68%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(5.41%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	8.94%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.53%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	19.27%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	15.60%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	15.60%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	19.27%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.60%	14.84%
b. Tier 1/Tier 2 UAL rate	3.53%	1.07%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	19.27%	16.06%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	69,668	69,668
Tier 1/Tier 2 valuation payroll	0	69,668	69,668
OPSRP valuation payroll	4,745	358,078	362,823
Combined valuation payroll	**$4,745**	**$427,746**	**$432,491**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	1	7	8	0	1	4	5
Total	0	1	7	8	0	1	4	5
Active Members with previous service segments with the employer								
General Service	1	0	N/A	1	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	0	N/A	1	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	1	0	0	1
Police & Fire	1	0	0	1	1	0	0	1
Total	1	0	0	1	2	0	0	2
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	6	0	1	7	6	0	1	7
Total	6	0	1	7	6	0	1	7
Grand Total Number of Members	**8**	**1**	**8**	**17**	**8**	**1**	**5**	**14**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44			1							**1**
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	1,860
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total	1	1,860

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	1	1,177
55-59	1	2,870
60-64	3	1,852
65-69	1	164
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	6	1,628

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Jefferson County Soil & Water Conservation District/2841
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System (“PERS” or “the System”) as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

Milliman

November 2017
Jefferson County Soil & Water Conservation District/2841

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Jefferson County Soil & Water Conservation District/2841

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Jefferson County Soil & Water Conservation District -- #2841

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Jefferson County Soil & Water Conservation District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Jefferson County Soil & Water Conservation District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Jefferson County Soil & Water Conservation District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	10.01%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	3.36%	3.36%	3.36%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**14.93%**	**13.41%**	**18.14%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**15.42%**	**13.83%**	**18.56%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 64%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.41%	11.41%
Minimum 2019-2021 Rate	8.41%	5.41%
Maximum 2019-2021 Rate	14.41%	17.41%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$132,805	$131,462	($1,343)	101%	$140,343	(1%)
12/31/2012	147,933	162,410	14,477	91%	185,702	8%
12/31/2013	167,632	175,485	7,853	96%	111,298	7%
12/31/2014	174,278	208,639	34,361	84%	191,735	18%
12/31/2015	174,898	225,571	50,673	78%	202,093	25%
12/31/2016	188,344	293,669	105,325	64%	236,690	44%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Jefferson County Soil & Water Conservation District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$105,325	$50,673
Allocated pooled OPSRP UAL	40,749	28,730
Side account	0	0
Net unfunded pension actuarial accrued liability	146,074	79,403
Combined valuation payroll	236,690	202,093
Net pension UAL as a percentage of payroll	62%	39%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($32)	$981

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$8,432	$6,609
Tier 1/Tier 2 valuation payroll	84,254	64,277
Tier 1/Tier 2 pension normal cost rate	10.01%	10.28%
Tier 1/ Tier 2 Actuarial accrued liability	$293,669	$225,571
Actuarial asset value	188,344	174,898
Tier 1/Tier 2 Unfunded actuarial accrued liability	105,325	50,673
Tier 1/ Tier 2 Funded status	64%	78%
Combined valuation payroll	$236,690	$202,093
Tier 1/Tier 2 UAL as a percentage of payroll	45%	25%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	3.36%	1.13%
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	1	1

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	236,690	202,093
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$20,920	$19,784
2. Employer reserves	132,502	117,772
3. Benefits in force reserve	34,922	37,342
4. Total market value of assets ***(1. + 2. + 3.)***	**$188,344**	**$174,898**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$174,898
2.	Regular employer contributions	6,171
3.	Benefit payments and expenses	(6,838)
4.	Adjustments [1]	1,362
5.	Interest credited	12,752
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$188,344**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	8,432	6,609
Total	**$8,432**	**$6,609**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$8,310	$8,432	$122

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	211,194	144,944
▪ **Total Active Members**	**$211,194**	**$144,944**
Dormant Members	0	0
Retired Members and Beneficiaries	82,475	80,627
Total Actuarial Accrued Liability	**$293,669**	**$225,571**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$288,907	$293,669	$4,762

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$293,669	$225,571
2. Actuarial value of assets	188,344	174,898
3. Unfunded accrued liability *(1. – 2.)*	105,325	50,673
4. Funded percentage *(2. ÷ 1.)*	64%	78%
5. Combined valuation payroll	$236,690	$202,093
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	45%	25%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$7,847	$610	$564	$7,801	$618
December 31, 2015	$42,826	$3,099	$3,088	$42,815	$3,133
December 31, 2016	N/A	N/A	N/A	$54,709	$3,863
Total				**$105,325**	**$7,614**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$225,571
b. Normal cost at December 31, 2015 (excluding assumed expenses)	6,303
c. Benefit payments during 2016	(6,780)
d. Interest at 7.50% to December 31, 2016	16,900
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	241,994
f. Change in actuarial accrued liability due to assumption, method, and plan changes	4,762
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	246,756
2. Actuarial accrued liability at December 31, 2016	293,669
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(46,913)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	174,898
b. Contributions for 2016[1]	6,171
c. Benefit payments and expenses during 2016	(6,838)
d. Interest at 7.50% to December 31, 2016	13,092
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	187,323
5. Actuarial value of assets at December 31, 2016	188,344
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	1,021
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($45,892)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$50,673**
2. Expected increase	3,998
3. Liability (gain)/loss	46,913
4. Asset (gain)/loss	(1,021)
5. Change due to changes in assumptions, methods, and plan provisions	4,762
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$105,325**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	8,432	84,254	10.01%	6,609	64,277	10.28%
Total	**$8,432**	**$84,254**	**10.01%**	**$6,609**	**$64,277**	**10.28%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$105,325	$50,673
2. Next year's Tier 1/Tier 2 UAL payment	7,614	3,709
3. Combined valuation payroll	236,690	202,093
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	3.22%	1.84%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	10.01%	10.28%
b. Tier 1/Tier 2 UAL rate	3.22%	1.84%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	13.37%	12.27%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	11.41%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.41%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.28%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	64%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.80%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	6.61%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	16.21%
7. Advisory July 1, 2019 total pension rate, before adjustment	13.37%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	3.22%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.22%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	13.37%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	10.01%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	10.01%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	13.37%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	10.01%	10.28%
b. Tier 1/Tier 2 UAL rate	3.22%	0.98%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	13.37%	11.41%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	84,254	0	84,254
Tier 1/Tier 2 valuation payroll	84,254	0	84,254
OPSRP valuation payroll	152,436	0	152,436
Combined valuation payroll	**$236,690**	**$0**	**$236,690**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	3	4	0	1	3	4
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	3	4	0	1	3	4
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	1	1	2	0	1	1	2
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	1	2	0	1	1	2
Grand Total Number of Members	**0**	**2**	**4**	**6**	**0**	**2**	**4**	**6**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44				1						**1**
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74	1	650
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	1	650

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Jefferson County/2006
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Jefferson County/2006

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Jefferson County/2006

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Jefferson County -- #2006

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Jefferson County to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Jefferson County.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Jefferson County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	18.12%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	3.58%	3.58%	3.58%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**23.26%**	**13.63%**	**18.36%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**23.75%**	**14.05%**	**18.78%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 79%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	18.08%	18.08%
Minimum 2019-2021 Rate	14.46%	10.84%
Maximum 2019-2021 Rate	21.70%	25.32%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$25,322,119	$30,409,250	$5,087,131	83%	$5,991,100	85%
12/31/2012	28,079,743	30,329,042	2,249,299	93%	5,795,860	39%
12/31/2013	30,314,168	30,961,235	647,067	98%	5,612,190	12%
12/31/2014	30,949,852	36,202,532	5,252,680	85%	6,002,205	88%
12/31/2015	30,378,123	37,234,295	6,856,172	82%	5,949,011	115%
12/31/2016	30,675,054	38,898,207	8,223,153	79%	6,040,164	136%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Jefferson County

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$8,223,153	$6,856,172
Allocated pooled OPSRP UAL	1,039,888	845,735
Side account	0	0
Net unfunded pension actuarial accrued liability	9,263,041	7,701,907
Combined valuation payroll	6,040,164	5,949,011
Net pension UAL as a percentage of payroll	153%	129%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($822)	$28,886

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$339,398	$352,467
Tier 1/Tier 2 valuation payroll	1,872,563	2,045,428
Tier 1/Tier 2 pension normal cost rate	18.12%	17.23%
Tier 1/ Tier 2 Actuarial accrued liability	$38,898,207	$37,234,295
Actuarial asset value	30,675,054	30,378,123
Tier 1/Tier 2 Unfunded actuarial accrued liability	8,223,153	6,856,172
Tier 1/ Tier 2 Funded status	79%	82%
Combined valuation payroll	$6,040,164	$5,949,011
Tier 1/Tier 2 UAL as a percentage of payroll	136%	115%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	3.58%	0.85%
Tier 1/Tier 2 active members [1]	32	36
Tier 1/Tier 2 dormant members	64	72
Tier 1/Tier 2 retirees and beneficiaries	200	195

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) RHIA	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	6,040,164	5,949,011
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$4,553,963	$4,634,919
2. Employer reserves	16,356,455	15,817,788
3. Benefits in force reserve	9,764,636	9,925,416
4. Total market value of assets ***(1. + 2. + 3.)***	**$30,675,054**	**$30,378,123**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$30,378,123
2.	Regular employer contributions	345,914
3.	Benefit payments and expenses	(1,911,867)
4.	Adjustments [1]	(249,880)
5.	Interest credited	2,112,764
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$30,675,054**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$41,300	$54,953
Tier 1 General Service	101,668	96,426
Tier 2 Police & Fire	102,042	84,510
Tier 2 General Service	94,388	116,578
Total	**$339,398**	**$352,467**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$330,455	$339,398	$8,943

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$1,396,977	$1,430,743
▪ Tier 1 General Service	5,673,168	5,387,388
▪ Tier 2 Police & Fire	2,148,056	1,912,720
▪ Tier 2 General Service	3,110,658	3,205,503
▪ **Total Active Members**	**$12,328,859**	**$11,936,354**
Dormant Members	3,508,697	3,867,067
Retired Members and Beneficiaries	23,060,651	21,430,874
Total Actuarial Accrued Liability	**$38,898,207**	**$37,234,295**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$38,236,370	$38,898,207	$661,837

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$38,898,207	$37,234,295
2. Actuarial value of assets	30,675,054	30,378,123
3. Unfunded accrued liability *(1. – 2.)*	8,223,153	6,856,172
4. Funded percentage *(2. ÷ 1.)*	79%	82%
5. Combined valuation payroll	$6,040,164	$5,949,011
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	136%	115%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$646,567	$50,273	$46,484	$642,778	$50,941
December 31, 2015	$6,209,605	$449,320	$447,770	$6,208,055	$454,270
December 31, 2016	N/A	N/A	N/A	$1,372,320	$96,895
Total				**$8,223,153**	**$602,106**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$37,234,295
b. Normal cost at December 31, 2015 (excluding assumed expenses)	336,238
c. Benefit payments during 2016	(1,895,790)
d. Interest at 7.50% to December 31, 2016	2,734,089
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	38,408,832
f. Change in actuarial accrued liability due to assumption, method, and plan changes	661,837
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	39,070,669
2. Actuarial accrued liability at December 31, 2016	38,898,207
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	172,462
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	30,378,123
b. Contributions for 2016[1]	345,914
c. Benefit payments and expenses during 2016	(1,911,867)
d. Interest at 7.50% to December 31, 2016	2,219,636
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	31,031,806
5. Actuarial value of assets at December 31, 2016	30,675,054
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(356,752)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($184,290)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$6,856,172**
2. Expected increase	520,854
3. Liability (gain)/loss	(172,462)
4. Asset (gain)/loss	356,752
5. Change due to changes in assumptions, methods, and plan provisions	661,837
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$8,223,153**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$41,300	$151,620	27.24%	$54,953	$216,032	25.44%
Tier 1 General Service	101,668	573,085	17.74%	96,426	555,199	17.37%
Tier 2 Police & Fire	102,042	463,499	22.02%	84,510	404,007	20.92%
Tier 2 General Service	94,388	684,359	13.79%	116,578	870,190	13.40%
Total	**$339,398**	**$1,872,563**	**18.12%**	**$352,467**	**$2,045,428**	**17.23%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$8,223,153	$6,856,172
2. Next year's Tier 1/Tier 2 UAL payment	602,106	499,593
3. Combined valuation payroll	6,040,164	5,949,011
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	9.97%	8.40%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.12%	17.23%
b. Tier 1/Tier 2 UAL rate	9.97%	8.40%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	28.23%	25.78%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	18.08%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	18.08%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.62%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.62%
c. Funded percentage	79%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.62%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	14.46%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	21.70%
7. Advisory July 1, 2019 total pension rate, before adjustment	28.23%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(6.53%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	9.97%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.44%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	21.70%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	18.12%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	18.12%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	21.70%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.12%	17.23%
b. Tier 1/Tier 2 UAL rate	3.44%	0.70%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	21.70%	18.08%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$573,085	$151,620	$724,705
Tier 2	684,359	463,499	1,147,858
Tier 1/Tier 2 valuation payroll	1,257,444	615,119	1,872,563
OPSRP valuation payroll	2,789,289	1,378,312	4,167,601
Combined valuation payroll	**$4,046,733**	**$1,993,431**	**$6,040,164**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	9	13	54	76	9	17	51	77
Police & Fire	3	7	27	37	4	6	27	37
Total	12	20	81	113	13	23	78	114
Active Members with previous service segments with the employer								
General Service	29	33	N/A	62	28	31	N/A	59
Police & Fire	4	15	N/A	19	5	15	N/A	20
Total	33	48	N/A	81	33	46	N/A	79
Dormant Members								
General Service	20	33	17	70	21	38	13	72
Police & Fire	4	7	7	18	5	8	4	17
Total	24	40	24	88	26	46	17	89
Retired Members and Beneficiaries								
General Service	122	30	4	156	125	24	2	151
Police & Fire	44	4	1	49	42	4	0	46
Total	166	34	5	205	167	28	2	197
Grand Total Number of Members	**235**	**142**	**110**	**487**	**239**	**143**	**97**	**479**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39			1							1
40-44			1	2						3
45-49			1	2	3					6
50-54			2	1	1		1			5
55-59				3	3		2			8
60-64			1	2	1	1				5
65-69				2	1					3
70-74		1								1
75+										
Total	0	1	6	12	9	1	3	0	0	32

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	2	470
40-44	6	442
45-49	7	334
50-54	16	851
55-59	10	531
60-64	7	257
65-69	8	229
70-74	6	376
75+	2	141
Total	64	485

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	3	41
45-49		
50-54	7	763
55-59	13	1,020
60-64	37	787
65-69	53	786
70-74	34	683
75-79	21	473
80-84	23	840
85-89	6	554
90-94	2	426
95-99	1	305
100+		
Total	200	732

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Juntura Road District #4/2809
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Juntura Road District #4/2809

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Juntura Road District #4 -- #2809

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Juntura Road District #4 to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Juntura Road District #4.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Juntura Road District #4

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.95%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	908.84%	908.84%	908.84%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**927.35%**	**918.89%**	**923.62%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**927.84%**	**919.31%**	**924.04%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 22%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	N/A	N/A
Minimum 2019-2021 Rate	N/A	N/A
Maximum 2019-2021 Rate	N/A	N/A

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$20,783	$51,040	$30,257	41%	$0	0%
12/31/2012	20,456	48,501	28,045	42%	0	0%
12/31/2013	20,534	48,614	28,080	42%	0	0%
12/31/2014	17,797	54,556	36,759	33%	0	0%
12/31/2015	14,685	54,440	39,755	27%	0	0%
12/31/2016	12,409	55,920	43,511	22%	368	11824%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Juntura Road District #4

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$43,511	$39,755
Allocated pooled OPSRP UAL	63	0
Side account	0	0
Net unfunded pension actuarial accrued liability	43,574	39,755
Combined valuation payroll	368	0
Net pension UAL as a percentage of payroll	11,841%	0%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	$0	$0

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$0	$0
Tier 1/Tier 2 valuation payroll	0	0
Tier 1/Tier 2 pension normal cost rate	16.95%	5.85%
Tier 1/ Tier 2 Actuarial accrued liability	$55,920	$54,440
Actuarial asset value	12,409	14,685
Tier 1/Tier 2 Unfunded actuarial accrued liability	43,511	39,755
Tier 1/ Tier 2 Funded status	22%	27%
Combined valuation payroll	$368	$0
Tier 1/Tier 2 UAL as a percentage of payroll	11824%	0%
Tier 1/Tier 2 UAL rate	908.84%	0.15%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	2	2

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	368	0
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	(11,270)	(10,529)
3. Benefits in force reserve	23,678	25,214
4. Total market value of assets ***(1. + 2. + 3.)***	**$12,409**	**$14,685**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$14,685
2. Regular employer contributions	10
3. Benefit payments and expenses	(4,636)
4. Adjustments [1]	1,470
5. Interest credited	880
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$12,409**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$0**	**$0**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$0**	**$0**
Dormant Members	0	0
Retired Members and Beneficiaries	55,920	54,440
Total Actuarial Accrued Liability	**$55,920**	**$54,440**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$54,252	$55,920	$1,668

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$55,920	$54,440
2. Actuarial value of assets	12,409	14,685
3. Unfunded accrued liability *(1. – 2.)*	43,511	39,755
4. Funded percentage *(2. ÷ 1.)*	22%	27%
5. Combined valuation payroll	$368	$0
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	11824%	0%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$28,058	$2,182	$2,017	$27,893	$2,211
December 31, 2015	$11,697	$846	$843	$11,694	$856
December 31, 2016	N/A	N/A	N/A	$3,924	$277
Total				**$43,511**	**$3,344**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$54,440
b. Normal cost at December 31, 2015 (excluding assumed expenses)	0
c. Benefit payments during 2016	(4,597)
d. Interest at 7.50% to December 31, 2016	3,911
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	53,754
f. Change in actuarial accrued liability due to assumption, method, and plan changes	1,668
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	55,422
2. Actuarial accrued liability at December 31, 2016	55,920
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(498)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	14,685
b. Contributions for 2016[1]	10
c. Benefit payments and expenses during 2016	(4,636)
d. Interest at 7.50% to December 31, 2016	928
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	10,987
5. Actuarial value of assets at December 31, 2016	12,409
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	1,422
7. Total actuarial gain/(loss) *(3. + 6.)*	**$924**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$39,755**
2. Expected increase	3,012
3. Liability (gain)/loss	498
4. Asset (gain)/loss	(1,422)
5. Change due to changes in assumptions, methods, and plan provisions	1,668
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$43,511**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$0**	**$0**	**16.95%**	**$0**	**$0**	**17.01%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$43,511	$39,755
2. Next year's Tier 1/Tier 2 UAL payment	3,344	3,028
3. Combined valuation payroll	368	0
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	908.70%	0.00%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	908.70%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	925.79%	16.86%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	925.79%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	925.79%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	N/A
b. Preliminary size of rate collar *(maximum of 3% or a.)*	N/A
c. Funded percentage	N/A
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	N/A
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	N/A
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	N/A
7. Advisory July 1, 2019 total pension rate, before adjustment	N/A
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	N/A
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	N/A
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	N/A
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	N/A
12. Tier 1/Tier 2 retiree healthcare rate	N/A
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	N/A
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	N/A
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	N/A
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	N/A

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	908.70%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	925.79%	16.86%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	0	0	0
OPSRP valuation payroll	368	0	368
Combined valuation payroll	**$368**	**$0**	**$368**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	2	0	0	2	2	0	0	2
Police & Fire	0	0	0	0	0	0	0	0
Total	2	0	0	2	2	0	0	2
Grand Total Number of Members	**2**	**0**	**0**	**2**	**2**	**0**	**0**	**2**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74	2	193
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	2	193

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Klamath County Fire District #1/2515
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Klamath County Fire District #1/2515

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Klamath County Fire District #1/2515

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Klamath County Fire District #1 -- #2515

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Klamath County Fire District #1 to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Klamath County Fire District #1.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Klamath County Fire District #1

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	20.57%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	14.29%	14.29%	14.29%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**36.42%**	**24.34%**	**29.07%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**36.91%**	**24.76%**	**29.49%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 64%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	26.41%	26.41%
Minimum 2019-2021 Rate	21.13%	15.85%
Maximum 2019-2021 Rate	31.69%	36.97%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$27,401,974	$35,883,765	$8,481,791	76%	$5,209,949	163%
12/31/2012	30,046,017	37,192,655	7,146,638	81%	5,617,966	127%
12/31/2013	32,664,639	37,839,742	5,175,103	86%	4,890,407	106%
12/31/2014	33,469,217	44,744,795	11,275,578	75%	5,000,010	226%
12/31/2015	32,653,714	47,964,445	15,310,731	68%	4,872,201	314%
12/31/2016	32,272,221	50,243,327	17,971,106	64%	4,948,399	363%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Klamath County Fire District #1

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$17,971,106	$15,310,731
Allocated pooled OPSRP UAL	851,927	692,651
Side account	0	0
Net unfunded pension actuarial accrued liability	18,823,033	16,003,382
Combined valuation payroll	4,948,399	4,872,201
Net pension UAL as a percentage of payroll	380%	328%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($674)	$23,658

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$395,560	$417,549
Tier 1/Tier 2 valuation payroll	1,922,797	2,145,952
Tier 1/Tier 2 pension normal cost rate	20.57%	19.46%
Tier 1/ Tier 2 Actuarial accrued liability	$50,243,327	$47,964,445
Actuarial asset value	32,272,221	32,653,714
Tier 1/Tier 2 Unfunded actuarial accrued liability	17,971,106	15,310,731
Tier 1/ Tier 2 Funded status	64%	68%
Combined valuation payroll	$4,948,399	$4,872,201
Tier 1/Tier 2 UAL as a percentage of payroll	363%	314%
Tier 1/Tier 2 UAL rate	14.29%	6.95%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	19	21
Tier 1/Tier 2 dormant members	7	3
Tier 1/Tier 2 retirees and beneficiaries	74	75

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	4,948,399	4,872,201
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$2,824,348	$2,680,159
2. Employer reserves	14,355,739	14,011,442
3. Benefits in force reserve	15,092,133	15,962,113
4. Total market value of assets ***(1. + 2. + 3.)***	**$32,272,221**	**$32,653,714**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$32,653,714
2.	Regular employer contributions	599,879
3.	Benefit payments and expenses	(2,954,965)
4.	Adjustments [1]	(247,820)
5.	Interest credited	2,221,413
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$32,272,221**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$223,877	$248,625
Tier 1 General Service	0	0
Tier 2 Police & Fire	164,003	157,032
Tier 2 General Service	7,680	11,892
Total	**$395,560**	**$417,549**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$381,725	$395,560	$13,835

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$8,331,872	$9,120,070
▪ Tier 1 General Service	4,058	0
▪ Tier 2 Police & Fire	3,974,647	3,670,214
▪ Tier 2 General Service	166,350	200,102
▪ **Total Active Members**	**$12,476,927**	**$12,990,386**
Dormant Members	2,124,069	508,801
Retired Members and Beneficiaries	35,642,331	34,465,258
Total Actuarial Accrued Liability	**$50,243,327**	**$47,964,445**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$48,701,158	$50,243,327	$1,542,169

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$50,243,327	$47,964,445
2. Actuarial value of assets	32,272,221	32,653,714
3. Unfunded accrued liability *(1. – 2.)*	17,971,106	15,310,731
4. Funded percentage *(2. ÷ 1.)*	64%	68%
5. Combined valuation payroll	$4,948,399	$4,872,201
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	363%	314%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$5,171,111	$402,077	$371,770	$5,140,804	$407,418
December 31, 2015	$10,139,620	$733,692	$731,160	$10,137,088	$741,774
December 31, 2016	N/A	N/A	N/A	$2,693,214	$190,158
Total				**$17,971,106**	**$1,339,350**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$47,964,445
b. Normal cost at December 31, 2015 (excluding assumed expenses)	398,080
c. Benefit payments during 2016	(2,930,116)
d. Interest at 7.50% to December 31, 2016	3,502,382
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	48,934,791
f. Change in actuarial accrued liability due to assumption, method, and plan changes	1,542,169
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	50,476,960
2. Actuarial accrued liability at December 31, 2016	50,243,327
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	233,633
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	32,653,714
b. Contributions for 2016[1]	599,879
c. Benefit payments and expenses during 2016	(2,954,965)
d. Interest at 7.50% to December 31, 2016	2,360,713
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	32,659,341
5. Actuarial value of assets at December 31, 2016	32,272,221
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(387,120)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($153,487)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$15,310,731**
2. Expected increase	964,719
3. Liability (gain)/loss	(233,633)
4. Asset (gain)/loss	387,120
5. Change due to changes in assumptions, methods, and plan provisions	1,542,169
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$17,971,106**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$223,877	$995,658	22.49%	$248,625	$1,162,178	21.39%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	164,003	852,200	19.24%	157,032	860,315	18.25%
Tier 2 General Service	7,680	74,939	10.25%	11,892	123,459	9.63%
Total	**$395,560**	**$1,922,797**	**20.57%**	**$417,549**	**$2,145,952**	**19.46%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$17,971,106	$15,310,731
2. Next year's Tier 1/Tier 2 UAL payment	1,339,350	1,135,769
3. Combined valuation payroll	4,948,399	4,872,201
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	27.07%	23.31%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	20.57%	19.46%
b. Tier 1/Tier 2 UAL rate	27.07%	23.31%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	47.78%	42.92%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	26.41%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	26.41%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	5.28%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	5.28%
c. Funded percentage	64%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	8.45%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	17.96%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	34.86%
7. Advisory July 1, 2019 total pension rate, before adjustment	47.78%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(12.92%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	27.07%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	14.15%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	34.86%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	20.57%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	20.57%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	34.86%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	20.57%	19.46%
b. Tier 1/Tier 2 UAL rate	14.15%	6.80%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	34.86%	26.41%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$995,658	$995,658
Tier 2	74,939	852,200	927,139
Tier 1/Tier 2 valuation payroll	74,939	1,847,858	1,922,797
OPSRP valuation payroll	476,136	2,549,466	3,025,602
Combined valuation payroll	**$551,075**	**$4,397,324**	**$4,948,399**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	10	11	0	2	7	9
Police & Fire	9	9	30	48	10	9	27	46
Total	9	10	40	59	10	11	34	55
Active Members with previous service segments with the employer								
General Service	1	0	N/A	1	0	0	N/A	0
Police & Fire	4	9	N/A	13	4	11	N/A	15
Total	5	9	N/A	14	4	11	N/A	15
Dormant Members								
General Service	0	2	2	4	0	1	1	2
Police & Fire	1	4	1	6	0	2	0	2
Total	1	6	3	10	0	3	1	4
Retired Members and Beneficiaries								
General Service	5	0	0	5	5	0	0	5
Police & Fire	62	7	1	70	60	10	1	71
Total	67	7	1	75	65	10	1	76
Grand Total Number of Members	**82**	**32**	**44**	**158**	**79**	**35**	**36**	**150**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39				1						**1**
40-44			1	3						**4**
45-49				3	3					**6**
50-54				1	1	4				**6**
55-59				1		1				**2**
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**9**	**4**	**5**	**0**	**0**	**0**	**19**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	665
45-49	2	612
50-54	1	2,647
55-59	2	4,218
60-64	1	415
65-69		
70-74		
75+		
Total	7	1,912

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	4	2,645
55-59	10	2,944
60-64	22	3,659
65-69	16	3,192
70-74	10	1,966
75-79	3	1,790
80-84	5	376
85-89	2	2,896
90-94	2	570
95-99		
100+		
Total	74	2,776

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Knappa Svensen Burnside Rural Fire Protection District/2760
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Knappa Svensen Burnside Rural Fire Protection District/2760

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Knappa Svensen Burnside Rural Fire Protection District -- #2760

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Knappa Svensen Burnside Rural Fire Protection District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Knappa Svensen Burnside Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Knappa Svensen Burnside Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.52%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(4.16%)	(4.16%)	(4.16%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**18.92%**	**5.89%**	**10.62%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**19.41%**	**6.31%**	**11.04%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 82%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	14.36%	14.36%
Minimum 2019-2021 Rate	11.36%	8.36%
Maximum 2019-2021 Rate	17.36%	20.36%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$331,085	$326,025	($5,060)	102%	$78,399	(6%)
12/31/2012	385,794	376,481	(9,313)	102%	83,896	(11%)
12/31/2013	446,356	423,729	(22,627)	105%	87,524	(26%)
12/31/2014	487,092	558,717	71,625	87%	96,567	74%
12/31/2015	512,926	631,796	118,870	81%	161,233	74%
12/31/2016	555,737	679,713	123,976	82%	157,677	79%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Knappa Svensen Burnside Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$123,976	$118,870
Allocated pooled OPSRP UAL	27,146	22,922
Side account	0	0
Net unfunded pension actuarial accrued liability	151,122	141,792
Combined valuation payroll	157,677	161,233
Net pension UAL as a percentage of payroll	96%	88%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($21)	$783

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$22,197	$20,614
Tier 1/Tier 2 valuation payroll	103,166	104,020
Tier 1/Tier 2 pension normal cost rate	21.52%	19.82%
Tier 1/ Tier 2 Actuarial accrued liability	$679,713	$631,796
Actuarial asset value	555,737	512,926
Tier 1/Tier 2 Unfunded actuarial accrued liability	123,976	118,870
Tier 1/ Tier 2 Funded status	82%	81%
Combined valuation payroll	$157,677	$161,233
Tier 1/Tier 2 UAL as a percentage of payroll	79%	74%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(4.16%)	(5.46%)
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) RHIA	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	157,677	161,233
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$154,843	$146,720
2. Employer reserves	400,894	366,206
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$555,737**	**$512,926**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$512,926
2. Regular employer contributions	8,114
3. Benefit payments and expenses	0
4. Adjustments [1]	(2,742)
5. Interest credited	37,439
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$555,737**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Tier 1 Police & Fire	$22,197	$20,614
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$22,197**	**$20,614**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$21,562	$22,197	$635

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$679,713	$631,796
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$679,713**	**$631,796**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$679,713**	**$631,796**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$654,756	$679,713	$24,957

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$679,713	$631,796
2. Actuarial value of assets	555,737	512,926
3. Unfunded accrued liability *(1. – 2.)*	123,976	118,870
4. Funded percentage *(2. ÷ 1.)*	82%	81%
5. Combined valuation payroll	$157,677	$161,233
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	79%	74%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($22,609)	($1,758)	($1,625)	($22,476)	($1,781)
December 31, 2015	$141,479	$10,237	$10,202	$141,444	$10,350
December 31, 2016	N/A	N/A	N/A	$5,008	$354
Total				**$123,976**	**$8,923**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$631,796
b. Normal cost at December 31, 2015 (excluding assumed expenses)	19,645
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	48,121
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	699,562
f. Change in actuarial accrued liability due to assumption, method, and plan changes	24,957
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	724,519
2. Actuarial accrued liability at December 31, 2016	679,713
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	44,806
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	512,926
b. Contributions for 2016[1]	8,114
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	38,774
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	559,814
5. Actuarial value of assets at December 31, 2016	555,737
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(4,077)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$40,729**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$118,870**
2. Expected increase	20,878
3. Liability (gain)/loss	(44,806)
4. Asset (gain)/loss	4,077
5. Change due to changes in assumptions, methods, and plan provisions	24,957
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$123,976**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$22,197	$103,166	21.52%	$20,614	$104,020	19.82%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$22,197**	**$103,166**	**21.52%**	**$20,614**	**$104,020**	**19.82%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$123,976	$118,870
2. Next year's Tier 1/Tier 2 UAL payment	8,923	8,479
3. Combined valuation payroll	157,677	161,233
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	5.66%	5.26%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.52%	19.82%
b. Tier 1/Tier 2 UAL rate	5.66%	5.26%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	27.32%	25.23%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	14.36%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	14.36%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.87%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	82%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	11.36%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	17.36%
7. Advisory July 1, 2019 total pension rate, before adjustment	27.32%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(9.96%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	5.66%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(4.30%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	17.36%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	21.52%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.52%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.36%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.52%	19.82%
b. Tier 1/Tier 2 UAL rate	(4.30%)	(5.61%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	17.36%	14.36%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$103,166	$103,166
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	0	103,166	103,166
OPSRP valuation payroll	0	54,511	54,511
Combined valuation payroll	**$0**	**$157,677**	**$157,677**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	1	0	1	2	1	0	1	2
Total	1	0	1	2	1	0	1	2
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**1**	**0**	**1**	**2**	**1**	**0**	**1**	**2**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59						1				1
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	1	0	0	0	1

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

LaGrande Rural Fire Protection District/2879
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
LaGrande Rural Fire Protection District/2879

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
LaGrande Rural Fire Protection District/2879

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

LaGrande Rural Fire Protection District -- #2879

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for LaGrande Rural Fire Protection District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to LaGrande Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for LaGrande Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.95%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	0.14%	0.14%	0.14%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**18.65%**	**10.19%**	**14.92%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**19.14%**	**10.61%**	**15.34%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 100%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.86%	16.86%
Minimum 2019-2021 Rate	13.49%	10.12%
Maximum 2019-2021 Rate	20.23%	23.60%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$0	$0	$0	0%	$0	0%
12/31/2012	0	0	0	0%	0	0%
12/31/2013	0	0	0	0%	0	0%
12/31/2014	(2)	0	2	0%	75,446	0%
12/31/2015	(3)	0	3	0%	91,304	0%
12/31/2016	18	0	(18)	0%	85,760	0%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

LaGrande Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	($18)	$3
Allocated pooled OPSRP UAL	14,765	12,980
Side account	0	0
Net unfunded pension actuarial accrued liability	14,747	12,983
Combined valuation payroll	85,760	91,304
Net pension UAL as a percentage of payroll	17%	14%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($12)	$443

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$0	$0
Tier 1/Tier 2 valuation payroll	0	0
Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
Tier 1/ Tier 2 Actuarial accrued liability	$0	$0
Actuarial asset value	18	(3)
Tier 1/Tier 2 Unfunded actuarial accrued liability	(18)	3
Tier 1/ Tier 2 Funded status	0%	0%
Combined valuation payroll	$85,760	$91,304
Tier 1/Tier 2 UAL as a percentage of payroll	0%	0%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	0.14%	0.15%
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	85,760	91,304
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	18	(3)
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$18**	**($3)**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	($3)
2.	Regular employer contributions	124
3.	Benefit payments and expenses	0
4.	Adjustments [1]	(120)
5.	Interest credited	17
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$18**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$0**	**$0**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$0**	**$0**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$0**	**$0**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$0	$0
2. Actuarial value of assets	18	(3)
3. Unfunded accrued liability *(1. – 2.)*	(18)	3
4. Funded percentage *(2. ÷ 1.)*	100%	100%
5. Combined valuation payroll	$85,760	$91,304
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	0%	0%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2015	$3	$0	$0	$3	$0
December 31, 2016	N/A	N/A	N/A	($21)	($1)
Total				**($18)**	**($1)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$0
b. Normal cost at December 31, 2015 (excluding assumed expenses)	0
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	0
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	0
f. Change in actuarial accrued liability due to assumption, method, and plan changes	0
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	0
2. Actuarial accrued liability at December 31, 2016	0
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	0
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	(3)
b. Contributions for 2016[1]	124
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	4
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	126
5. Actuarial value of assets at December 31, 2016	18
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(108)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($108)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$3**
2. Expected increase	(129)
3. Liability (gain)/loss	0
4. Asset (gain)/loss	108
5. Change due to changes in assumptions, methods, and plan provisions	0
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**($18)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$0**	**$0**	**16.95%**	**$0**	**$0**	**16.71%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($18)	$3
2. Next year's Tier 1/Tier 2 UAL payment	(1)	0
3. Combined valuation payroll	85,760	91,304
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.00%	0.00%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	0.00%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	17.09%	16.86%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.86%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.86%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.37%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.37%
c. Funded percentage	100%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.37%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.49%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	20.23%
7. Advisory July 1, 2019 total pension rate, before adjustment	17.09%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	0.00%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.00%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	17.09%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.95%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.95%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.09%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	0.00%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	17.09%	16.86%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	0	0	0
OPSRP valuation payroll	0	85,760	85,760
Combined valuation payroll	**$0**	**$85,760**	**$85,760**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	1	1	0	0	1	1
Total	0	0	1	1	0	0	1	1
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Lake Chinook Fire and Rescue District/2881
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Lake Chinook Fire and Rescue District/2881

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Lake Chinook Fire and Rescue District -- #2881

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Lake Chinook Fire and Rescue District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Lake Chinook Fire and Rescue District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Lake Chinook Fire and Rescue District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.95%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	0.14%	0.14%	0.14%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**18.65%**	**10.19%**	**14.92%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**19.14%**	**10.61%**	**15.34%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 100%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.86%	16.86%
Minimum 2019-2021 Rate	13.49%	10.12%
Maximum 2019-2021 Rate	20.23%	23.60%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$0	$0	$0	0%	$0	0%
12/31/2012	0	0	0	0%	0	0%
12/31/2013	0	0	0	0%	0	0%
12/31/2014	(13)	0	13	0%	35,652	0%
12/31/2015	(1)	0	1	0%	37,501	0%
12/31/2016	6	0	(6)	0%	42,205	0%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Lake Chinook Fire and Rescue District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($6)	$1
Allocated pooled OPSRP UAL	7,266	5,331
Side account	0	0
Net unfunded pension actuarial accrued liability	7,260	5,332
Combined valuation payroll	42,205	37,501
Net pension UAL as a percentage of payroll	17%	14%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($6)	$182

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$0	$0
Tier 1/Tier 2 valuation payroll	0	0
Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
Tier 1/ Tier 2 Actuarial accrued liability	$0	$0
Actuarial asset value	6	(1)
Tier 1/Tier 2 Unfunded actuarial accrued liability	(6)	1
Tier 1/ Tier 2 Funded status	0%	0%
Combined valuation payroll	$42,205	$37,501
Tier 1/Tier 2 UAL as a percentage of payroll	0%	0%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	0.14%	0.15%
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) RHIA	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	42,205	37,501
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	6	(1)
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$6**	**($1)**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	($1)
2.	Regular employer contributions	59
3.	Benefit payments and expenses	0
4.	Adjustments [1]	(60)
5.	Interest credited	8
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$6**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$0**	**$0**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$0**	**$0**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$0**	**$0**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$0	$0
2. Actuarial value of assets	6	(1)
3. Unfunded accrued liability *(1. – 2.)*	(6)	1
4. Funded percentage *(2. ÷ 1.)*	100%	100%
5. Combined valuation payroll	$42,205	$37,501
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	0%	0%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2015	$1	$0	$0	$1	$0
December 31, 2016	N/A	N/A	N/A	($7)	$0
Total				**($6)**	**$0**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$0
b. Normal cost at December 31, 2015 (excluding assumed expenses)	0
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	0
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	0
f. Change in actuarial accrued liability due to assumption, method, and plan changes	0
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	0
2. Actuarial accrued liability at December 31, 2016	0
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	0
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	(1)
b. Contributions for 2016[1]	59
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	2
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	59
5. Actuarial value of assets at December 31, 2016	6
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(54)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($54)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$1**
2. Expected increase	(61)
3. Liability (gain)/loss	0
4. Asset (gain)/loss	54
5. Change due to changes in assumptions, methods, and plan provisions	0
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**($6)**

1 *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$0**	**$0**	**16.95%**	**$0**	**$0**	**16.71%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($6)	$1
2. Next year's Tier 1/Tier 2 UAL payment	0	0
3. Combined valuation payroll	42,205	37,501
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.00%	0.00%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	0.00%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	17.09%	16.86%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.86%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.86%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.37%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.37%
c. Funded percentage	100%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.37%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.49%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	20.23%
7. Advisory July 1, 2019 total pension rate, before adjustment	17.09%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	0.00%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.00%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	17.09%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.95%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.95%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.09%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	0.00%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	17.09%	16.86%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	0	0	0
OPSRP valuation payroll	0	42,205	42,205
Combined valuation payroll	**$0**	**$42,205**	**$42,205**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	1	1	0	0	1	1
Total	0	0	1	1	0	0	1	1
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Lakeside Water District/2644
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Lakeside Water District/2644

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Lakeside Water District/2644

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Lakeside Water District -- #2644

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Lakeside Water District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Lakeside Water District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Lakeside Water District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	11.78%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	5.09%	5.09%	5.09%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**18.43%**	**15.14%**	**19.87%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**18.92%**	**15.56%**	**20.29%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 83%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	15.21%	15.21%
Minimum 2019-2021 Rate	12.17%	9.13%
Maximum 2019-2021 Rate	18.25%	21.29%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$476,386	$632,094	$155,708	75%	$148,317	105%
12/31/2012	489,340	572,638	83,298	85%	150,540	55%
12/31/2013	559,083	602,151	43,068	93%	153,024	28%
12/31/2014	583,390	706,891	123,501	83%	161,166	77%
12/31/2015	575,421	724,912	149,491	79%	160,366	93%
12/31/2016	556,108	669,663	113,555	83%	175,115	65%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Lakeside Water District

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	$113,555	$149,491
Allocated pooled OPSRP UAL	30,148	22,798
Side account	0	0
Net unfunded pension actuarial accrued liability	143,703	172,289
Combined valuation payroll	175,115	160,366
Net pension UAL as a percentage of payroll	82%	107%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($24)	$779

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$10,838	$9,468
Tier 1/Tier 2 valuation payroll	92,011	79,092
Tier 1/Tier 2 pension normal cost rate	11.78%	11.97%
Tier 1/ Tier 2 Actuarial accrued liability	$669,663	$724,912
Actuarial asset value	556,108	575,421
Tier 1/Tier 2 Unfunded actuarial accrued liability	113,555	149,491
Tier 1/ Tier 2 Funded status	83%	79%
Combined valuation payroll	$175,115	$160,366
Tier 1/Tier 2 UAL as a percentage of payroll	65%	93%
Tier 1/Tier 2 UAL rate	5.09%	3.24%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	1	2
Tier 1/Tier 2 retirees and beneficiaries	7	7

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	175,115	160,366
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$20,899	$59,269
2. Employer reserves	359,491	323,198
3. Benefits in force reserve	175,718	192,954
4. Total market value of assets ***(1. + 2. + 3.)***	**$556,108**	**$575,421**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$575,421
2. Regular employer contributions	12,494
3. Benefit payments and expenses	(34,405)
4. Adjustments [1]	(34,845)
5. Interest credited	37,443
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$556,108**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	10,838	9,468
Total	**$10,838**	**$9,468**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$10,557	$10,838	$281

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	254,680	203,798
▪ **Total Active Members**	**$254,680**	**$203,798**
Dormant Members	0	104,490
Retired Members and Beneficiaries	414,983	416,624
Total Actuarial Accrued Liability	**$669,663**	**$724,912**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$652,762	$669,663	$16,901

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$669,663	$724,912
2. Actuarial value of assets	556,108	575,421
3. Unfunded accrued liability *(1. – 2.)*	113,555	149,491
4. Funded percentage *(2. ÷ 1.)*	83%	79%
5. Combined valuation payroll	$175,115	$160,366
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	65%	93%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$43,035	$3,346	$3,094	$42,783	$3,391
December 31, 2015	$106,456	$7,703	$7,676	$106,429	$7,788
December 31, 2016	N/A	N/A	N/A	($35,657)	($2,518)
Total				**$113,555**	**$8,661**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$724,912
b. Normal cost at December 31, 2015 (excluding assumed expenses)	9,030
c. Benefit payments during 2016	(34,115)
d. Interest at 7.50% to December 31, 2016	53,428
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	753,255
f. Change in actuarial accrued liability due to assumption, method, and plan changes	16,901
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	770,156
2. Actuarial accrued liability at December 31, 2016	669,663
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	100,493
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	575,421
b. Contributions for 2016[1]	12,494
c. Benefit payments and expenses during 2016	(34,405)
d. Interest at 7.50% to December 31, 2016	42,335
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	595,845
5. Actuarial value of assets at December 31, 2016	556,108
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(39,737)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$60,756**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$149,491**
2. Expected increase	7,919
3. Liability (gain)/loss	(100,493)
4. Asset (gain)/loss	39,737
5. Change due to changes in assumptions, methods, and plan provisions	16,901
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$113,555**

1 *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	10,838	92,011	11.78%	9,468	79,092	11.97%
Total	**$10,838**	**$92,011**	**11.78%**	**$9,468**	**$79,092**	**11.97%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$113,555	$149,491
2. Next year's Tier 1/Tier 2 UAL payment	8,661	11,049
3. Combined valuation payroll	175,115	160,366
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	4.95%	6.89%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.78%	11.97%
b. Tier 1/Tier 2 UAL rate	4.95%	6.89%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	16.87%	19.01%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	15.21%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	15.21%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.04%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.04%
c. Funded percentage	83%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.04%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	12.17%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	18.25%
7. Advisory July 1, 2019 total pension rate, before adjustment	16.87%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	4.95%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	4.95%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	16.87%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.78%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.78%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	16.87%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.78%	11.97%
b. Tier 1/Tier 2 UAL rate	4.95%	3.09%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	16.87%	15.21%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	92,011	0	92,011
Tier 1/Tier 2 valuation payroll	92,011	0	92,011
OPSRP valuation payroll	83,104	0	83,104
Combined valuation payroll	**$175,115**	**$0**	**$175,115**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	2	3	0	1	2	3
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	2	3	0	1	2	3
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	1	0	1	0	2	0	2
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	2	0	2
Retired Members and Beneficiaries								
General Service	5	2	0	7	5	2	0	7
Police & Fire	0	0	0	0	0	0	0	0
Total	5	2	0	7	5	2	0	7
Grand Total Number of Members	**5**	**4**	**2**	**11**	**5**	**5**	**2**	**12**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54				1						**1**
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64	1	0
65-69		
70-74		
75+		
Total	1	0

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	8
65-69	2	135
70-74	2	475
75-79	1	441
80-84	1	1,217
85-89		
90-94		
95-99		
100+		
Total	7	412

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members’ regular account balances. 7.20% compounded annually on members’ variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Lane County/2008
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Lane County/2008

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Lane County -- #2008

November 2017

Secondary Employers

2047 Lane County Fair Board

CONTENTS

Executive Summary

Milliman has prepared this report for Lane County to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Lane County.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Lane County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.37%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	3.99%	3.99%	3.99%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**21.92%**	**14.04%**	**18.77%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**22.41%**	**14.46%**	**19.19%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 73%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.97%	16.97%
Minimum 2019-2021 Rate	13.58%	10.19%
Maximum 2019-2021 Rate	20.36%	23.75%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$511,461,459	$623,549,175	$112,087,716	82%	$81,017,355	138%
12/31/2012	550,497,247	610,507,495	60,010,248	90%	75,072,561	80%
12/31/2013	597,410,846	627,518,523	30,107,676	95%	73,750,639	41%
12/31/2014	605,171,349	734,035,783	128,864,434	82%	77,932,450	165%
12/31/2015	583,497,280	751,433,938	167,936,658	78%	81,920,691	205%
12/31/2016	583,360,503	794,140,140	210,779,637	73%	86,709,301	243%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Lane County

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$210,779,637	$167,936,658
Allocated pooled OPSRP UAL	14,928,063	11,646,168
Side account	0	0
Net unfunded pension actuarial accrued liability	225,707,700	179,582,826
Combined valuation payroll	86,709,301	81,920,691
Net pension UAL as a percentage of payroll	260%	219%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($11,806)	$397,779

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$6,475,216	$6,846,270
Tier 1/Tier 2 valuation payroll	39,566,323	41,862,631
Tier 1/Tier 2 pension normal cost rate	16.37%	16.35%
Tier 1/ Tier 2 Actuarial accrued liability	$794,140,140	$751,433,938
Actuarial asset value	583,360,503	583,497,280
Tier 1/Tier 2 Unfunded actuarial accrued liability	210,779,637	167,936,658
Tier 1/ Tier 2 Funded status	73%	78%
Combined valuation payroll	$86,709,301	$81,920,691
Tier 1/Tier 2 UAL as a percentage of payroll	243%	205%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	3.99%	0.62%
Tier 1/Tier 2 active members [1]	534	577
Tier 1/Tier 2 dormant members	334	327
Tier 1/Tier 2 retirees and beneficiaries	2,081	2,043

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	86,709,301	81,920,691
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$52,965,838	$58,189,779
2. Employer reserves	286,383,450	277,495,578
3. Benefits in force reserve	244,011,215	247,811,922
4. Total market value of assets ***(1. + 2. + 3.)***	**$583,360,503**	**$583,497,280**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$583,497,280
2.	Regular employer contributions	5,422,777
3.	Benefit payments and expenses	(47,776,186)
4.	Adjustments [1]	2,090,858
5.	Interest credited	40,125,773
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$583,360,503**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$772,038	$930,115
Tier 1 General Service	2,079,646	2,429,261
Tier 2 Police & Fire	1,530,719	1,442,700
Tier 2 General Service	2,092,813	2,044,194
Total	**$6,475,216**	**$6,846,270**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$6,337,574	$6,475,216	$137,642

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$25,368,942	$29,346,645
▪ Tier 1 General Service	67,101,188	74,805,735
▪ Tier 2 Police & Fire	32,555,792	28,493,137
▪ Tier 2 General Service	48,503,668	45,591,367
▪ **Total Active Members**	**$173,529,590**	**$178,236,884**
Dormant Members	44,341,556	38,123,668
Retired Members and Beneficiaries	576,268,994	535,073,386
Total Actuarial Accrued Liability	**$794,140,140**	**$751,433,938**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$774,116,716	$794,140,140	$20,023,424

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$794,140,140	$751,433,938
2. Actuarial value of assets	583,360,503	583,497,280
3. Unfunded accrued liability *(1. – 2.)*	210,779,637	167,936,658
4. Funded percentage *(2. ÷ 1.)*	73%	78%
5. Combined valuation payroll	$86,709,301	$81,920,691
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	243%	205%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$30,084,451	$2,339,200	$2,162,880	$29,908,131	$2,370,275
December 31, 2015	$137,852,207	$9,974,834	$9,940,410	$137,817,783	$10,084,720
December 31, 2016	N/A	N/A	N/A	$43,053,723	$3,039,873
Total				**$210,779,637**	**$15,494,868**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$751,433,938
b. Normal cost at December 31, 2015 (excluding assumed expenses)	6,529,861
c. Benefit payments during 2016	(47,374,419)
d. Interest at 7.50% to December 31, 2016	54,825,874
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	765,415,254
f. Change in actuarial accrued liability due to assumption, method, and plan changes	20,023,424
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	785,438,678
2. Actuarial accrued liability at December 31, 2016	794,140,140
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(8,701,462)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	583,497,280
b. Contributions for 2016[1]	5,422,777
c. Benefit payments and expenses during 2016	(47,776,186)
d. Interest at 7.50% to December 31, 2016	42,174,043
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	583,317,914
5. Actuarial value of assets at December 31, 2016	583,360,503
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	42,588
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($8,658,874)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$167,936,658**
2. Expected increase	14,160,681
3. Liability (gain)/loss	8,701,462
4. Asset (gain)/loss	(42,588)
5. Change due to changes in assumptions, methods, and plan provisions	20,023,424
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$210,779,637**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$772,038	$3,370,912	22.90%	$930,115	$4,266,491	21.80%
Tier 1 General Service	2,079,646	11,559,787	17.99%	2,429,261	13,239,549	18.35%
Tier 2 Police & Fire	1,530,719	8,075,260	18.96%	1,442,700	7,936,491	18.18%
Tier 2 General Service	2,092,813	16,560,364	12.64%	2,044,194	16,420,100	12.45%
Total	**$6,475,216**	**$39,566,323**	**16.37%**	**$6,846,270**	**$41,862,631**	**16.35%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$210,779,637	$167,936,658
2. Next year's Tier 1/Tier 2 UAL payment	15,494,868	12,314,034
3. Combined valuation payroll	86,709,301	81,920,691
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	17.87%	15.03%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.37%	16.35%
b. Tier 1/Tier 2 UAL rate	17.87%	15.03%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	34.38%	31.53%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.97%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.97%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.39%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.39%
c. Funded percentage	73%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.39%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.58%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	20.36%
7. Advisory July 1, 2019 total pension rate, before adjustment	34.38%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(14.02%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	17.87%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.85%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	20.36%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.37%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.37%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	20.36%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.37%	16.35%
b. Tier 1/Tier 2 UAL rate	3.85%	0.47%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	20.36%	16.97%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$11,559,787	$3,370,912	$14,930,699
Tier 2	16,560,364	8,075,260	24,635,624
Tier 1/Tier 2 valuation payroll	28,120,151	11,446,172	39,566,323
OPSRP valuation payroll	41,767,657	5,375,321	47,142,978
Combined valuation payroll	**$69,887,808**	**$16,821,493**	**$86,709,301**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	155	255	728	1,138	180	262	636	1,078
Police & Fire	34	90	79	203	42	93	71	206
Total	189	345	807	1,341	222	355	707	1,284
Active Members with previous service segments with the employer								
General Service	124	139	N/A	263	135	132	N/A	267
Police & Fire	11	31	N/A	42	11	32	N/A	43
Total	135	170	N/A	305	146	164	N/A	310
Dormant Members								
General Service	160	143	104	407	160	140	80	380
Police & Fire	17	14	9	40	16	11	9	36
Total	177	157	113	447	176	151	89	416
Retired Members and Beneficiaries								
General Service	1,651	134	28	1,813	1,598	155	25	1,778
Police & Fire	274	22	1	297	262	28	2	292
Total	1,925	156	29	2,110	1,860	183	27	2,070
Grand Total Number of Members	**2,426**	**828**	**949**	**4,203**	**2,404**	**853**	**823**	**4,080**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39		1	11	7						**19**
40-44	1		26	45	3					**75**
45-49		2	15	53	18	3				**91**
50-54			7	48	25	28	3			**111**
55-59		1	18	47	16	25	10	1		**118**
60-64		1	11	37	19	24	2	1		**95**
65-69		2	3	7	3	4	1			**20**
70-74		1	1	1	1					**4**
75+			1							**1**
Total	**1**	**8**	**93**	**245**	**85**	**84**	**16**	**2**	**0**	**534**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	6	365
40-44	19	857
45-49	52	963
50-54	59	1,097
55-59	66	1,120
60-64	62	751
65-69	39	1,684
70-74	23	902
75+	8	929
Total	334	1,041

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	17	1,172
45-49	8	2,109
50-54	28	2,802
55-59	100	1,968
60-64	352	1,996
65-69	608	1,807
70-74	427	2,031
75-79	265	1,632
80-84	141	1,485
85-89	76	1,206
90-94	44	1,066
95-99	14	503
100+	1	254
Total	2,081	1,811

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

League of Oregon Cities/2521
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
League of Oregon Cities/2521

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

League of Oregon Cities -- #2521

November 2017

Secondary Employers

2693 City/County Insurance Services

CONTENTS

Executive Summary

Milliman has prepared this report for League of Oregon Cities to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to League of Oregon Cities.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for League of Oregon Cities

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	12.38%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	7.17%	7.17%	7.17%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**21.11%**	**17.22%**	**21.95%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**21.60%**	**17.64%**	**22.37%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 66%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.89%	16.89%
Minimum 2019-2021 Rate	13.51%	10.13%
Maximum 2019-2021 Rate	20.27%	23.65%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$11,873,512	$15,628,011	$3,754,499	76%	$6,154,733	61%
12/31/2012	12,998,627	16,022,753	3,024,126	81%	6,322,166	48%
12/31/2013	14,118,834	16,767,448	2,648,614	84%	6,364,078	42%
12/31/2014	14,507,273	19,985,347	5,478,074	73%	6,677,111	82%
12/31/2015	14,158,626	20,654,485	6,495,859	69%	7,228,275	90%
12/31/2016	14,361,068	21,690,717	7,329,649	66%	7,830,119	94%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

League of Oregon Cities

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$7,329,649	$6,495,859
Allocated pooled OPSRP UAL	1,348,050	1,027,600
Side account	0	0
Net unfunded pension actuarial accrued liability	8,677,699	7,523,459
Combined valuation payroll	7,830,119	7,228,275
Net pension UAL as a percentage of payroll	111%	104%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($1,066)	$35,098

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$348,299	$336,505
Tier 1/Tier 2 valuation payroll	2,813,732	2,750,034
Tier 1/Tier 2 pension normal cost rate	12.38%	12.24%
Tier 1/ Tier 2 Actuarial accrued liability	$21,690,717	$20,654,485
Actuarial asset value	14,361,068	14,158,626
Tier 1/Tier 2 Unfunded actuarial accrued liability	7,329,649	6,495,859
Tier 1/ Tier 2 Funded status	66%	69%
Combined valuation payroll	$7,830,119	$7,228,275
Tier 1/Tier 2 UAL as a percentage of payroll	94%	90%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	7.17%	4.65%
Tier 1/Tier 2 active members [1]	23	24
Tier 1/Tier 2 dormant members	13	15
Tier 1/Tier 2 retirees and beneficiaries	41	43

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) RHIA	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	7,830,119	7,228,275
3. Average Amortization factor	8.994	9.504
4. Total side account rate ***(-1. ÷ 2. ÷ 3.)*** [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$1,495,689	$1,622,107
2. Employer reserves	7,106,474	6,476,200
3. Benefits in force reserve	5,758,905	6,060,320
4. Total market value of assets ***(1. + 2. + 3.)***	**$14,361,068**	**$14,158,626**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$14,158,626
2.	Regular employer contributions	510,952
3.	Benefit payments and expenses	(1,127,565)
4.	Adjustments [1]	(172,864)
5.	Interest credited	991,918
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$14,361,068**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	136,377	144,459
Tier 2 Police & Fire	0	0
Tier 2 General Service	211,922	192,046
Total	**$348,299**	**$336,505**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$341,361	$348,299	$6,938

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	3,344,968	3,103,903
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	3,578,931	3,050,659
▪ **Total Active Members**	**$6,923,899**	**$6,154,562**
Dormant Members	1,166,302	1,414,533
Retired Members and Beneficiaries	13,600,516	13,085,390
Total Actuarial Accrued Liability	**$21,690,717**	**$20,654,485**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$20,951,165	$21,690,717	$739,552

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$21,690,717	$20,654,485
2. Actuarial value of assets	14,361,068	14,158,626
3. Unfunded accrued liability *(1. – 2.)*	7,329,649	6,495,859
4. Funded percentage *(2. ÷ 1.)*	66%	69%
5. Combined valuation payroll	$7,830,119	$7,228,275
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	94%	90%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$2,646,572	$205,783	$190,272	$2,631,061	$208,516
December 31, 2015	$3,849,287	$278,530	$277,569	$3,848,326	$281,599
December 31, 2016	N/A	N/A	N/A	$850,262	$60,034
Total				**$7,329,649**	**$550,149**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$20,654,485
b. Normal cost at December 31, 2015 (excluding assumed expenses)	320,933
c. Benefit payments during 2016	(1,118,083)
d. Interest at 7.50% to December 31, 2016	1,519,193
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	21,376,528
f. Change in actuarial accrued liability due to assumption, method, and plan changes	739,552
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	22,116,080
2. Actuarial accrued liability at December 31, 2016	21,690,717
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	425,363
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	14,158,626
b. Contributions for 2016[1]	510,952
c. Benefit payments and expenses during 2016	(1,127,565)
d. Interest at 7.50% to December 31, 2016	1,038,774
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	14,580,788
5. Actuarial value of assets at December 31, 2016	14,361,068
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(219,720)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$205,643**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$6,495,859**
2. Expected increase	299,881
3. Liability (gain)/loss	(425,363)
4. Asset (gain)/loss	219,720
5. Change due to changes in assumptions, methods, and plan provisions	739,552
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$7,329,649**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	136,377	1,045,418	13.05%	144,459	1,090,706	13.24%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	211,922	1,768,314	11.98%	192,046	1,659,328	11.57%
Total	**$348,299**	**$2,813,732**	**12.38%**	**$336,505**	**$2,750,034**	**12.24%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$7,329,649	$6,495,859
2. Next year's Tier 1/Tier 2 UAL payment	550,149	484,313
3. Combined valuation payroll	7,830,119	7,228,275
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	7.03%	6.70%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.38%	12.24%
b. Tier 1/Tier 2 UAL rate	7.03%	6.70%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	19.55%	19.09%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.89%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.89%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.38%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.38%
c. Funded percentage	66%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.73%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	12.16%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	21.62%
7. Advisory July 1, 2019 total pension rate, before adjustment	19.55%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	7.03%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	7.03%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	19.55%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	12.38%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	12.38%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	19.55%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.38%	12.24%
b. Tier 1/Tier 2 UAL rate	7.03%	4.50%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	19.55%	16.89%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$1,045,418	$0	$1,045,418
Tier 2	1,768,314	0	1,768,314
Tier 1/Tier 2 valuation payroll	2,813,732	0	2,813,732
OPSRP valuation payroll	5,016,387	0	5,016,387
Combined valuation payroll	**$7,830,119**	**$0**	**$7,830,119**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	8	15	57	80	9	15	51	75
Police & Fire	0	0	0	0	0	0	0	0
Total	8	15	57	80	9	15	51	75
Active Members with previous service segments with the employer								
General Service	6	8	N/A	14	4	7	N/A	11
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	6	8	N/A	14	4	7	N/A	11
Dormant Members								
General Service	6	7	6	19	8	7	4	19
Police & Fire	0	0	0	0	0	0	0	0
Total	6	7	6	19	8	7	4	19
Retired Members and Beneficiaries								
General Service	37	4	5	46	38	5	5	48
Police & Fire	0	0	0	0	0	0	0	0
Total	37	4	5	46	38	5	5	48
Grand Total Number of Members	**57**	**34**	**68**	**159**	**59**	**34**	**60**	**153**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44			1	2						3
45-49			3	2	2					7
50-54				4		1				5
55-59			1		2			1		4
60-64			1	1	1					3
65-69				1						1
70-74										
75+										
Total	**0**	**0**	**6**	**10**	**5**	**1**	**0**	**1**	**0**	**23**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	2	1,161
40-44		
45-49	4	1,102
50-54	3	874
55-59		
60-64	2	631
65-69	2	655
70-74		
75+		
Total	13	917

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	2	2,884
60-64	5	1,635
65-69	13	2,105
70-74	12	2,553
75-79	6	1,742
80-84	3	2,942
85-89		
90-94		
95-99		
100+		
Total	41	2,225

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Linn County/2014
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Linn County/2014

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Linn County/2014

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Linn County -- #2014

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Linn County to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Linn County.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Linn County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	17.17%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	8.49%	8.49%	8.49%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**27.22%**	**18.54%**	**23.27%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**27.71%**	**18.96%**	**23.69%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 70%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	21.38%	21.38%
Minimum 2019-2021 Rate	17.10%	12.82%
Maximum 2019-2021 Rate	25.66%	29.94%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$144,346,411	$184,066,697	$39,720,286	78%	$34,012,953	117%
12/31/2012	159,362,121	189,449,664	30,087,543	84%	34,115,995	88%
12/31/2013	175,224,089	199,169,091	23,945,002	88%	32,600,717	73%
12/31/2014	180,267,989	234,410,147	54,142,158	77%	33,973,436	159%
12/31/2015	176,031,314	242,098,001	66,066,687	73%	36,141,418	183%
12/31/2016	179,974,236	256,803,201	76,828,965	70%	37,468,112	205%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Linn County

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$76,828,965	$66,066,687
Allocated pooled OPSRP UAL	6,450,592	5,138,006
Side account	0	0
Net unfunded pension actuarial accrued liability	83,279,557	71,204,693
Combined valuation payroll	37,468,112	36,141,418
Net pension UAL as a percentage of payroll	222%	197%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($5,102)	$175,490

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$3,305,819	$3,378,919
Tier 1/Tier 2 valuation payroll	19,248,818	19,871,879
Tier 1/Tier 2 pension normal cost rate	17.17%	17.00%
Tier 1/ Tier 2 Actuarial accrued liability	$256,803,201	$242,098,001
Actuarial asset value	179,974,236	176,031,314
Tier 1/Tier 2 Unfunded actuarial accrued liability	76,828,965	66,066,687
Tier 1/ Tier 2 Funded status	70%	73%
Combined valuation payroll	$37,468,112	$36,141,418
Tier 1/Tier 2 UAL as a percentage of payroll	205%	183%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	8.49%	4.38%
Tier 1/Tier 2 active members [1]	275	294
Tier 1/Tier 2 dormant members	160	155
Tier 1/Tier 2 retirees and beneficiaries	697	677

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) RHIA	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	37,468,112	36,141,418
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$25,568,114	$26,472,607
2. Employer reserves	91,627,482	85,787,664
3. Benefits in force reserve	62,778,640	63,771,044
4. Total market value of assets ***(1. + 2. + 3.)***	**$179,974,236**	**$176,031,314**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$176,031,314
2.	Regular employer contributions	4,109,924
3.	Benefit payments and expenses	(12,291,746)
4.	Adjustments [1]	(301,642)
5.	Interest credited	12,426,386
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$179,974,236**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$625,471	$645,523
Tier 1 General Service	1,144,961	1,207,101
Tier 2 Police & Fire	662,893	657,302
Tier 2 General Service	872,494	868,993
Total	**$3,305,819**	**$3,378,919**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$3,231,943	$3,305,819	$73,876

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$21,198,488	$21,197,656
▪ Tier 1 General Service	38,394,579	38,003,489
▪ Tier 2 Police & Fire	13,871,437	12,603,233
▪ Tier 2 General Service	21,437,611	20,241,146
▪ **Total Active Members**	**$94,902,115**	**$92,045,524**
Dormant Members	13,639,934	12,358,584
Retired Members and Beneficiaries	148,261,152	137,693,893
Total Actuarial Accrued Liability	**$256,803,201**	**$242,098,001**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$250,353,036	$256,803,201	$6,450,165

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$256,803,201	$242,098,001
2. Actuarial value of assets	179,974,236	176,031,314
3. Unfunded accrued liability *(1. – 2.)*	76,828,965	66,066,687
4. Funded percentage *(2. ÷ 1.)*	70%	73%
5. Combined valuation payroll	$37,468,112	$36,141,418
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	205%	183%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$23,926,531	$1,860,394	$1,720,165	$23,786,302	$1,885,109
December 31, 2015	$42,140,156	$3,049,215	$3,038,692	$42,129,633	$3,082,806
December 31, 2016	N/A	N/A	N/A	$10,913,030	$770,531
Total				**$76,828,965**	**$5,738,446**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$242,098,001
b. Normal cost at December 31, 2015 (excluding assumed expenses)	3,222,186
c. Benefit payments during 2016	(12,188,381)
d. Interest at 7.50% to December 31, 2016	17,821,118
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	250,952,924
f. Change in actuarial accrued liability due to assumption, method, and plan changes	6,450,165
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	257,403,089
2. Actuarial accrued liability at December 31, 2016	256,803,201
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	599,888
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	176,031,314
b. Contributions for 2016[1]	4,109,924
c. Benefit payments and expenses during 2016	(12,291,746)
d. Interest at 7.50% to December 31, 2016	12,895,530
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	180,745,022
5. Actuarial value of assets at December 31, 2016	179,974,236
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(770,786)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($170,898)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$66,066,687**
2. Expected increase	4,141,215
3. Liability (gain)/loss	(599,888)
4. Asset (gain)/loss	770,786
5. Change due to changes in assumptions, methods, and plan provisions	6,450,165
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$76,828,965**

1 *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$625,471	$2,675,967	23.37%	$645,523	$2,868,769	22.50%
Tier 1 General Service	1,144,961	6,488,540	17.65%	1,207,101	6,755,975	17.87%
Tier 2 Police & Fire	662,893	3,251,761	20.39%	657,302	3,387,922	19.40%
Tier 2 General Service	872,494	6,832,550	12.77%	868,993	6,859,213	12.67%
Total	**$3,305,819**	**$19,248,818**	**17.17%**	**$3,378,919**	**$19,871,879**	**17.00%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$76,828,965	$66,066,687
2. Next year's Tier 1/Tier 2 UAL payment	5,738,446	4,909,609
3. Combined valuation payroll	37,468,112	36,141,418
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	15.32%	13.58%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.17%	17.00%
b. Tier 1/Tier 2 UAL rate	15.32%	13.58%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	32.63%	30.73%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	21.38%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	21.38%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	4.28%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.28%
c. Funded percentage	70%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.28%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	17.10%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	25.66%
7. Advisory July 1, 2019 total pension rate, before adjustment	32.63%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(6.97%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	15.32%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	8.35%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	25.66%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.17%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.17%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	25.66%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.17%	17.00%
b. Tier 1/Tier 2 UAL rate	8.35%	4.23%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	25.66%	21.38%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$6,488,540	$2,675,967	$9,164,507
Tier 2	6,832,550	3,251,761	10,084,311
Tier 1/Tier 2 valuation payroll	13,321,090	5,927,728	19,248,818
OPSRP valuation payroll	14,444,690	3,774,604	18,219,294
Combined valuation payroll	**$27,765,780**	**$9,702,332**	**$37,468,112**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	92	112	294	498	98	118	261	477
Police & Fire	30	41	54	125	34	44	49	127
Total	122	153	348	623	132	162	310	604
Active Members with previous service segments with the employer								
General Service	68	96	N/A	164	74	90	N/A	164
Police & Fire	17	11	N/A	28	20	10	N/A	30
Total	85	107	N/A	192	94	100	N/A	194
Dormant Members								
General Service	56	84	48	188	54	83	34	171
Police & Fire	12	8	2	22	11	7	1	19
Total	68	92	50	210	65	90	35	190
Retired Members and Beneficiaries								
General Service	493	73	13	579	480	70	10	560
Police & Fire	123	8	1	132	118	9	1	128
Total	616	81	14	711	598	79	11	688
Grand Total Number of Members	**891**	**433**	**412**	**1,736**	**889**	**431**	**356**	**1,676**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34		1	1							**2**
35-39			9	5						**14**
40-44			8	24	5					**37**
45-49		2	9	21	17	2				**51**
50-54		1	6	22	22	12				**63**
55-59		2	4	11	10	14	3	1		**45**
60-64			5	12	12	9	3	1		**42**
65-69			1	7	4	2		2	1	**17**
70-74				1	1		1	1		**4**
75+										
Total	**0**	**6**	**43**	**103**	**71**	**39**	**7**	**5**	**1**	**275**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34	3	97
35-39	6	368
40-44	18	540
45-49	18	595
50-54	28	742
55-59	38	618
60-64	24	1,058
65-69	13	1,419
70-74	10	1,311
75+	2	1,737
Total	160	798

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	3	1,781
45-49		
50-54	14	2,270
55-59	41	1,370
60-64	116	1,768
65-69	169	1,362
70-74	144	1,364
75-79	97	1,336
80-84	59	1,046
85-89	31	1,338
90-94	14	1,085
95-99	9	1,119
100+		
Total	697	1,410

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Malheur County/2039
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Malheur County/2039

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
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This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Malheur County -- #2039

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Malheur County to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Malheur County.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Malheur County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	**General Service**	**Police & Fire**
Pension			
Normal cost rate	17.88%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	1.51%	1.51%	1.51%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**20.95%**	**11.56%**	**16.29%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**21.44%**	**11.98%**	**16.71%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 83%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.16%	16.16%
Minimum 2019-2021 Rate	12.93%	9.70%
Maximum 2019-2021 Rate	19.39%	22.62%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$32,516,737	$37,111,809	$4,595,072	88%	$7,459,213	62%
12/31/2012	36,288,108	37,610,222	1,322,114	96%	7,739,628	17%
12/31/2013	40,424,622	38,745,745	(1,678,877)	104%	7,615,815	(22%)
12/31/2014	41,395,207	45,550,816	4,155,609	91%	7,701,161	54%
12/31/2015	39,964,309	46,633,086	6,668,777	86%	7,543,812	88%
12/31/2016	40,712,398	49,167,276	8,454,878	83%	7,748,213	109%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Malheur County

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$8,454,878	$6,668,777
Allocated pooled OPSRP UAL	1,333,949	1,072,458
Side account	0	0
Net unfunded pension actuarial accrued liability	9,788,827	7,741,235
Combined valuation payroll	7,748,213	7,543,812
Net pension UAL as a percentage of payroll	126%	103%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($1,055)	$36,630

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$676,252	$687,014
Tier 1/Tier 2 valuation payroll	3,781,903	3,956,898
Tier 1/Tier 2 pension normal cost rate	17.88%	17.36%
Tier 1/ Tier 2 Actuarial accrued liability	$49,167,276	$46,633,086
Actuarial asset value	40,712,398	39,964,309
Tier 1/Tier 2 Unfunded actuarial accrued liability	8,454,878	6,668,777
Tier 1/ Tier 2 Funded status	83%	86%
Combined valuation payroll	$7,748,213	$7,543,812
Tier 1/Tier 2 UAL as a percentage of payroll	109%	88%
Tier 1/Tier 2 UAL rate	1.51%	(1.20%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	69	73
Tier 1/Tier 2 dormant members	61	60
Tier 1/Tier 2 retirees and beneficiaries	184	186

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) **RHIA**	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	7,748,213	7,543,812
3. Average Amortization factor	8.994	9.504
4. Total side account rate ***(-1. ÷ 2. ÷ 3.)*** [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$6,413,467	$6,334,002
2. Employer reserves	23,766,672	22,506,937
3. Benefits in force reserve	10,532,259	11,123,371
4. Total market value of assets ***(1. + 2. + 3.)***	**$40,712,398**	**$39,964,309**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$39,964,309
2. Regular employer contributions	544,809
3. Benefit payments and expenses	(2,062,164)
4. Adjustments [1]	(518,065)
5. Interest credited	2,783,509
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$40,712,398**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$94,004	$100,484
Tier 1 General Service	205,726	197,687
Tier 2 Police & Fire	165,729	180,745
Tier 2 General Service	210,793	208,098
Total	**$676,252**	**$687,014**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$660,004	$676,252	$16,248

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$3,011,902	$3,091,675
▪ Tier 1 General Service	8,620,817	7,780,356
▪ Tier 2 Police & Fire	3,578,614	3,290,505
▪ Tier 2 General Service	4,544,249	4,444,659
▪ **Total Active Members**	**$19,755,582**	**$18,607,195**
Dormant Members	4,538,187	4,008,405
Retired Members and Beneficiaries	24,873,507	24,017,486
Total Actuarial Accrued Liability	**$49,167,276**	**$46,633,086**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$48,028,510	$49,167,276	$1,138,766

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$49,167,276	$46,633,086
2. Actuarial value of assets	40,712,398	39,964,309
3. Unfunded accrued liability *(1. – 2.)*	8,454,878	6,668,777
4. Funded percentage *(2. ÷ 1.)*	83%	86%
5. Combined valuation payroll	$7,748,213	$7,543,812
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	109%	88%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($1,677,582)	($130,439)	($120,607)	($1,667,750)	($132,172)
December 31, 2015	$8,346,359	$603,933	$601,849	$8,344,275	$610,586
December 31, 2016	N/A	N/A	N/A	$1,778,353	$125,563
Total				**$8,454,878**	**$603,977**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$46,633,086
b. Normal cost at December 31, 2015 (excluding assumed expenses)	655,187
c. Benefit payments during 2016	(2,044,823)
d. Interest at 7.50% to December 31, 2016	3,445,370
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	48,688,820
f. Change in actuarial accrued liability due to assumption, method, and plan changes	1,138,766
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	49,827,586
2. Actuarial accrued liability at December 31, 2016	49,167,276
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	660,310
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	39,964,309
b. Contributions for 2016[1]	544,809
c. Benefit payments and expenses during 2016	(2,062,164)
d. Interest at 7.50% to December 31, 2016	2,940,422
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	41,387,376
5. Actuarial value of assets at December 31, 2016	40,712,398
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(674,979)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($14,669)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$6,668,777**
2. Expected increase	632,666
3. Liability (gain)/loss	(660,310)
4. Asset (gain)/loss	674,979
5. Change due to changes in assumptions, methods, and plan provisions	1,138,766
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$8,454,878**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$94,004	$423,019	22.22%	$100,484	$484,904	20.72%
Tier 1 General Service	205,726	894,839	22.99%	197,687	881,468	22.43%
Tier 2 Police & Fire	165,729	779,344	21.27%	180,745	903,568	20.00%
Tier 2 General Service	210,793	1,684,701	12.51%	208,098	1,686,958	12.34%
Total	**$676,252**	**$3,781,903**	**17.88%**	**$687,014**	**$3,956,898**	**17.36%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$8,454,878	$6,668,777
2. Next year's Tier 1/Tier 2 UAL payment	603,977	473,494
3. Combined valuation payroll	7,748,213	7,543,812
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	7.80%	6.28%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.88%	17.36%
b. Tier 1/Tier 2 UAL rate	7.80%	6.28%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	25.82%	23.79%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.16%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.16%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.23%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.23%
c. Funded percentage	83%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.23%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	12.93%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	19.39%
7. Advisory July 1, 2019 total pension rate, before adjustment	25.82%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(6.43%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	7.80%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	1.37%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	19.39%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.88%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.88%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	19.39%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.88%	17.36%
b. Tier 1/Tier 2 UAL rate	1.37%	(1.35%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	19.39%	16.16%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$894,839	$423,019	$1,317,858
Tier 2	1,684,701	779,344	2,464,045
Tier 1/Tier 2 valuation payroll	2,579,540	1,202,363	3,781,903
OPSRP valuation payroll	2,724,619	1,241,691	3,966,310
Combined valuation payroll	**$5,304,159**	**$2,444,054**	**$7,748,213**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	17	34	62	113	17	35	58	110
Police & Fire	6	12	22	40	7	14	19	40
Total	23	46	84	153	24	49	77	150
Active Members with previous service segments with the employer								
General Service	18	13	N/A	31	18	14	N/A	32
Police & Fire	3	8	N/A	11	6	7	N/A	13
Total	21	21	N/A	42	24	21	N/A	45
Dormant Members								
General Service	24	21	14	59	26	20	11	57
Police & Fire	7	9	2	18	6	8	1	15
Total	31	30	16	77	32	28	12	72
Retired Members and Beneficiaries								
General Service	123	17	2	142	127	17	2	146
Police & Fire	42	2	0	44	37	5	0	42
Total	165	19	2	186	164	22	2	188
Grand Total Number of Members	**240**	**116**	**102**	**458**	**244**	**120**	**91**	**455**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39				1						**1**
40-44			4	4	1					**9**
45-49			3	6	4					**13**
50-54			5	3	4	1				**13**
55-59			6	6	3	1				**16**
60-64			2	6	2	1		2		**13**
65-69					1	1			2	**4**
70-74										
75+										
Total	**0**	**0**	**20**	**26**	**15**	**4**	**0**	**2**	**2**	**69**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	1	1,043
40-44	11	459
45-49	9	633
50-54	13	744
55-59	7	533
60-64	8	579
65-69	7	380
70-74	5	1,217
75+		
Total	61	632

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	1	354
45-49		
50-54	5	1,085
55-59	12	853
60-64	28	574
65-69	45	966
70-74	39	1,184
75-79	21	1,291
80-84	18	879
85-89	7	545
90-94	7	456
95-99	1	642
100+		
Total	184	937

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Mapleton Water District/2597
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Mapleton Water District/2597

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Mapleton Water District -- #2597

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Mapleton Water District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Mapleton Water District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Mapleton Water District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.83%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	1.19%	1.19%	1.19%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**19.58%**	**11.24%**	**15.97%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**20.07%**	**11.66%**	**16.39%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 93%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	15.02%	15.02%
Minimum 2019-2021 Rate	12.02%	9.02%
Maximum 2019-2021 Rate	18.02%	21.02%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$147,113	$169,350	$22,237	87%	$62,272	36%
12/31/2012	172,579	179,803	7,224	96%	63,361	11%
12/31/2013	200,313	187,040	(13,273)	107%	62,438	(21%)
12/31/2014	217,395	221,818	4,423	98%	66,719	7%
12/31/2015	228,376	235,890	7,514	97%	69,025	11%
12/31/2016	246,651	264,298	17,647	93%	76,138	23%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Mapleton Water District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$17,647	$7,514
Allocated pooled OPSRP UAL	13,108	9,813
Side account	0	0
Net unfunded pension actuarial accrued liability	30,755	17,327
Combined valuation payroll	76,138	69,025
Net pension UAL as a percentage of payroll	40%	25%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($10)	$335

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$9,572	$8,883
Tier 1/Tier 2 valuation payroll	56,860	53,563
Tier 1/Tier 2 pension normal cost rate	16.83%	16.58%
Tier 1/ Tier 2 Actuarial accrued liability	$264,298	$235,890
Actuarial asset value	246,651	228,376
Tier 1/Tier 2 Unfunded actuarial accrued liability	17,647	7,514
Tier 1/ Tier 2 Funded status	93%	97%
Combined valuation payroll	$76,138	$69,025
Tier 1/Tier 2 UAL as a percentage of payroll	23%	11%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	1.19%	(1.56%)
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	1	1

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	76,138	69,025
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$62,001	$58,749
2. Employer reserves	166,821	149,426
3. Benefits in force reserve	17,829	20,201
4. Total market value of assets ***(1. + 2. + 3.)***	**$246,651**	**$228,376**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$228,376
2.	Regular employer contributions	6,344
3.	Benefit payments and expenses	(3,491)
4.	Adjustments [1]	(1,217)
5.	Interest credited	16,639
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$246,651**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	9,572	8,883
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$9,572**	**$8,883**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$9,352	$9,572	$220

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	222,193	192,273
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$222,193**	**$192,273**
Dormant Members	0	0
Retired Members and Beneficiaries	42,105	43,617
Total Actuarial Accrued Liability	**$264,298**	**$235,890**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$255,556	$264,298	$8,742

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$264,298	$235,890
2. Actuarial value of assets	246,651	228,376
3. Unfunded accrued liability *(1. – 2.)*	17,647	7,514
4. Funded percentage *(2. ÷ 1.)*	93%	97%
5. Combined valuation payroll	$76,138	$69,025
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	23%	11%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($13,263)	($1,031)	($954)	($13,186)	($1,045)
December 31, 2015	$20,777	$1,503	$1,498	$20,772	$1,520
December 31, 2016	N/A	N/A	N/A	$10,061	$710
Total				**$17,647**	**$1,185**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$235,890
b. Normal cost at December 31, 2015 (excluding assumed expenses)	8,472
c. Benefit payments during 2016	(3,461)
d. Interest at 7.50% to December 31, 2016	17,880
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	258,781
f. Change in actuarial accrued liability due to assumption, method, and plan changes	8,742
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	267,523
2. Actuarial accrued liability at December 31, 2016	264,298
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	3,225
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	228,376
b. Contributions for 2016[1]	6,344
c. Benefit payments and expenses during 2016	(3,491)
d. Interest at 7.50% to December 31, 2016	17,235
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	248,464
5. Actuarial value of assets at December 31, 2016	246,651
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(1,813)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$1,412**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$7,514**
2. Expected increase	2,803
3. Liability (gain)/loss	(3,225)
4. Asset (gain)/loss	1,813
5. Change due to changes in assumptions, methods, and plan provisions	8,742
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$17,647**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	9,572	56,860	16.83%	8,883	53,563	16.58%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$9,572**	**$56,860**	**16.83%**	**$8,883**	**$53,563**	**16.58%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$17,647	$7,514
2. Next year's Tier 1/Tier 2 UAL payment	1,185	472
3. Combined valuation payroll	76,138	69,025
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	1.56%	0.68%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.83%	16.58%
b. Tier 1/Tier 2 UAL rate	1.56%	0.68%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	18.53%	17.41%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	15.02%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	15.02%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.00%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	93%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	12.02%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	18.02%
7. Advisory July 1, 2019 total pension rate, before adjustment	18.53%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.51%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	1.56%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	1.05%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	18.02%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.83%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.83%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	18.02%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.83%	16.58%
b. Tier 1/Tier 2 UAL rate	1.05%	(1.71%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	18.02%	15.02%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$56,860	$0	$56,860
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	56,860	0	56,860
OPSRP valuation payroll	19,278	0	19,278
Combined valuation payroll	**$76,138**	**$0**	**$76,138**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	1	2	1	0	1	2
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	1	2	1	0	1	2
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	1	0	0	1	1	0	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	0	1	1	0	0	1
Grand Total Number of Members	**2**	**0**	**1**	**3**	**2**	**0**	**1**	**3**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64					1					**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84	1	533
85-89		
90-94		
95-99		
100+		
Total	1	533

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Mid-Columbia Fire And Rescue V1-801/2877
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Mid-Columbia Fire And Rescue V1-801/2877

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Mid-Columbia Fire And Rescue V1-801 -- #2877

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Mid-Columbia Fire And Rescue V1-801 to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Mid-Columbia Fire And Rescue V1-801.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Mid-Columbia Fire And Rescue V1-801

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	17.54%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	0.32%	0.32%	0.32%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**19.42%**	**10.37%**	**15.10%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**19.91%**	**10.79%**	**15.52%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 57%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.95%	16.95%
Minimum 2019-2021 Rate	13.56%	10.17%
Maximum 2019-2021 Rate	20.34%	23.73%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$0	$0	$0	0%	$0	0%
12/31/2012	4,351	7,233	2,882	60%	107,251	3%
12/31/2013	19,554	27,204	7,650	72%	1,870,603	0%
12/31/2014	34,897	55,997	21,100	62%	1,889,293	1%
12/31/2015	48,957	83,767	34,810	58%	2,246,752	2%
12/31/2016	66,846	117,575	50,729	57%	2,020,916	3%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Mid-Columbia Fire And Rescue V1-801

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$50,729	$34,810
Allocated pooled OPSRP UAL	347,925	319,407
Side account	0	0
Net unfunded pension actuarial accrued liability	398,654	354,217
Combined valuation payroll	2,020,916	2,246,752
Net pension UAL as a percentage of payroll	20%	16%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($275)	$10,909

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$16,452	$15,285
Tier 1/Tier 2 valuation payroll	93,773	91,562
Tier 1/Tier 2 pension normal cost rate	17.54%	16.69%
Tier 1/ Tier 2 Actuarial accrued liability	$117,575	$83,767
Actuarial asset value	66,846	48,957
Tier 1/Tier 2 Unfunded actuarial accrued liability	50,729	34,810
Tier 1/ Tier 2 Funded status	57%	58%
Combined valuation payroll	$2,020,916	$2,246,752
Tier 1/Tier 2 UAL as a percentage of payroll	3%	2%
Tier 1/Tier 2 UAL rate	0.32%	0.26%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	2,020,916	2,246,752
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	66,846	48,957
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$66,846**	**$48,957**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$48,957
2. Regular employer contributions	16,078
3. Benefit payments and expenses	0
4. Adjustments [1]	(3,034)
5. Interest credited	4,844
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$66,846**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$16,452	$15,285
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$16,452**	**$15,285**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$15,822	$16,452	$630

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$117,575	$83,767
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$117,575**	**$83,767**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$117,575**	**$83,767**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$112,198	$117,575	$5,377

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$117,575	$83,767
2. Actuarial value of assets	66,846	48,957
3. Unfunded accrued liability *(1. – 2.)*	50,729	34,810
4. Funded percentage *(2. ÷ 1.)*	57%	58%
5. Combined valuation payroll	$2,020,916	$2,246,752
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	3%	2%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$7,644	$594	$550	$7,600	$602
December 31, 2015	$27,166	$1,966	$1,959	$27,159	$1,987
December 31, 2016	N/A	N/A	N/A	$15,970	$1,128
Total				**$50,729**	**$3,717**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$83,767
b. Normal cost at December 31, 2015 (excluding assumed expenses)	14,578
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	6,829
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	105,174
f. Change in actuarial accrued liability due to assumption, method, and plan changes	5,377
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	110,551
2. Actuarial accrued liability at December 31, 2016	117,575
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(7,024)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	48,957
b. Contributions for 2016[1]	16,078
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	4,275
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	69,311
5. Actuarial value of assets at December 31, 2016	66,846
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(2,465)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($9,489)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$34,810**
2. Expected increase	1,053
3. Liability (gain)/loss	7,024
4. Asset (gain)/loss	2,465
5. Change due to changes in assumptions, methods, and plan provisions	5,377
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$50,729**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$16,452	$93,773	17.54%	$15,285	$91,562	16.69%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$16,452**	**$93,773**	**17.54%**	**$15,285**	**$91,562**	**16.69%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$50,729	$34,810
2. Next year's Tier 1/Tier 2 UAL payment	3,717	2,560
3. Combined valuation payroll	2,020,916	2,246,752
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.18%	0.11%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.54%	16.69%
b. Tier 1/Tier 2 UAL rate	0.18%	0.11%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	17.86%	16.95%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.95%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.95%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.39%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.39%
c. Funded percentage	57%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.78%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	10.17%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	23.73%
7. Advisory July 1, 2019 total pension rate, before adjustment	17.86%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	0.18%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.18%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	17.86%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.54%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.54%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.86%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.54%	16.69%
b. Tier 1/Tier 2 UAL rate	0.18%	0.11%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	17.86%	16.95%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$93,773	$93,773
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	0	93,773	93,773
OPSRP valuation payroll	60,549	1,866,594	1,927,143
Combined valuation payroll	**$60,549**	**$1,960,367**	**$2,020,916**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	1	1	0	0	1	1
Police & Fire	1	0	18	19	1	0	23	24
Total	1	0	19	20	1	0	24	25
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	1	1	0	0	1	1
Total	0	0	1	1	0	0	1	1
Grand Total Number of Members	**1**	**0**	**20**	**21**	**1**	**0**	**25**	**26**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54					1					1
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	1	0	0	0	0	1

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Millington Rural Fire Protection District/2782
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Millington Rural Fire Protection District/2782

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman’s prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman’s consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman’s advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Millington Rural Fire Protection District -- #2782

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Millington Rural Fire Protection District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Millington Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Millington Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.21%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(15.70%)	(15.70%)	(15.70%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**7.07%**	**0.00%**	**0.00%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**7.56%**	**0.42%**	**0.42%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 154%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	8.47%	8.47%
Minimum 2019-2021 Rate	5.47%	2.47%
Maximum 2019-2021 Rate	11.47%	14.47%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$258,024	$202,616	($55,408)	127%	$51,989	(107%)
12/31/2012	298,900	214,629	(84,271)	139%	52,504	(161%)
12/31/2013	343,781	233,282	(110,499)	147%	53,819	(205%)
12/31/2014	371,916	290,282	(81,634)	128%	55,985	(146%)
12/31/2015	388,614	319,423	(69,191)	122%	58,225	(119%)
12/31/2016	418,025	271,881	(146,144)	154%	60,395	(242%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Millington Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($146,144)	($69,191)
Allocated pooled OPSRP UAL	10,398	8,277
Side account	0	0
Net unfunded pension actuarial accrued liability	(135,746)	(60,914)
Combined valuation payroll	60,395	58,225
Net pension UAL as a percentage of payroll	(225%)	(105%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($8)	$283

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$10,974	$13,105
Tier 1/Tier 2 valuation payroll	60,395	58,225
Tier 1/Tier 2 pension normal cost rate	21.21%	22.51%
Tier 1/ Tier 2 Actuarial accrued liability	$271,881	$319,423
Actuarial asset value	418,025	388,614
Tier 1/Tier 2 Unfunded actuarial accrued liability	(146,144)	(69,191)
Tier 1/ Tier 2 Funded status	154%	122%
Combined valuation payroll	$60,395	$58,225
Tier 1/Tier 2 UAL as a percentage of payroll	(242%)	(119%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(15.70%)	(14.04%)
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	60,395	58,225
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$105,639	$100,097
2. Employer reserves	312,386	288,517
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$418,025**	**$388,614**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$388,614
2.	Regular employer contributions	3,091
3.	Benefit payments and expenses	0
4.	Adjustments [1]	(1,803)
5.	Interest credited	28,122
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$418,025**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$13,105
Tier 1 General Service	10,974	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$10,974**	**$13,105**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$10,808	$10,974	$166

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$266,935	$319,423
▪ Tier 1 General Service	4,946	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$271,881**	**$319,423**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$271,881**	**$319,423**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$263,631	$271,881	$8,250

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$271,881	$319,423
2. Actuarial value of assets	418,025	388,614
3. Unfunded accrued liability *(1. – 2.)*	(146,144)	(69,191)
4. Funded percentage *(2. ÷ 1.)*	154%	122%
5. Combined valuation payroll	$60,395	$58,225
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(242%)	(119%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($110,414)	($8,585)	($7,938)	($109,767)	($8,699)
December 31, 2015	$41,223	$2,983	$2,973	$41,213	$3,016
December 31, 2016	N/A	N/A	N/A	($77,590)	($5,478)
Total				**($146,144)**	**($11,161)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$319,423
b. Normal cost at December 31, 2015 (excluding assumed expenses)	12,499
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	24,425
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	356,347
f. Change in actuarial accrued liability due to assumption, method, and plan changes	8,250
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	364,597
2. Actuarial accrued liability at December 31, 2016	271,881
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	92,716
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	388,614
b. Contributions for 2016[1]	3,091
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	29,262
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	420,967
5. Actuarial value of assets at December 31, 2016	418,025
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(2,943)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$89,773**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($69,191)**
2. Expected increase	4,570
3. Liability (gain)/loss	(92,716)
4. Asset (gain)/loss	2,943
5. Change due to changes in assumptions, methods, and plan provisions	8,250
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($146,144)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$13,105	$58,225	22.51%
Tier 1 General Service	10,974	60,395	18.17%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$10,974**	**$60,395**	**18.17%**	**$13,105**	**$58,225**	**22.51%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($146,144)	($69,191)
2. Next year's Tier 1/Tier 2 UAL payment	(11,161)	(5,602)
3. Combined valuation payroll	60,395	58,225
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(18.48%)	(9.62%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.17%	22.51%
b. Tier 1/Tier 2 UAL rate	(18.48%)	(9.62%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	(0.17%)	13.04%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	8.47%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	8.47%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.69%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	154%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	2.47%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	14.47%
7. Advisory July 1, 2019 total pension rate, before adjustment	(0.17%)
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	2.64%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(18.48%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(15.84%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	2.47%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	3.04%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	18.17%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.21%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	5.51%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.21%	22.51%
b. Tier 1/Tier 2 UAL rate	(15.84%)	(14.19%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	5.51%	8.47%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$60,395	$0	$60,395
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	60,395	0	60,395
OPSRP valuation payroll	0	0	0
Combined valuation payroll	**$60,395**	**$0**	**$60,395**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	0	1	0	0	0	0
Police & Fire	0	0	0	0	1	0	0	1
Total	1	0	0	1	1	0	0	1
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**1**	**0**	**0**	**1**	**1**	**0**	**0**	**1**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64					1					1
65-69										
70-74										
75+										
Total	0	0	0	0	1	0	0	0	0	1

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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Mt Angel Fire District/2861
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System (“PERS” or “the System”) as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Mt Angel Fire District/2861

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Mt Angel Fire District/2861

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Mt Angel Fire District -- #2861

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Mt Angel Fire District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Mt Angel Fire District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Mt Angel Fire District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.30%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(0.83%)	(0.83%)	(0.83%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**20.03%**	**9.22%**	**13.95%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**20.52%**	**9.64%**	**14.37%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 69%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	15.14%	15.14%
Minimum 2019-2021 Rate	12.11%	9.08%
Maximum 2019-2021 Rate	18.17%	21.20%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$6,360	$0	($6,360)	100%	$24,660	(26%)
12/31/2012	7,147	0	(7,147)	0%	15,167	(47%)
12/31/2013	7,909	1,744	(6,165)	453%	30,273	(20%)
12/31/2014	8,867	7,355	(1,512)	121%	63,558	(2%)
12/31/2015	10,084	12,500	2,416	81%	67,239	4%
12/31/2016	14,006	20,413	6,407	69%	81,734	8%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Mt Angel Fire District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$6,407	$2,416
Allocated pooled OPSRP UAL	14,072	9,559
Side account	0	0
Net unfunded pension actuarial accrued liability	20,479	11,975
Combined valuation payroll	81,734	67,239
Net pension UAL as a percentage of payroll	25%	18%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($11)	$326

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$6,722	$5,752
Tier 1/Tier 2 valuation payroll	34,831	30,900
Tier 1/Tier 2 pension normal cost rate	19.30%	18.61%
Tier 1/ Tier 2 Actuarial accrued liability	$20,413	$12,500
Actuarial asset value	14,006	10,084
Tier 1/Tier 2 Unfunded actuarial accrued liability	6,407	2,416
Tier 1/ Tier 2 Funded status	69%	81%
Combined valuation payroll	$81,734	$67,239
Tier 1/Tier 2 UAL as a percentage of payroll	8%	4%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(0.83%)	(3.47%)
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	81,734	67,239
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	14,006	10,084
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$14,006**	**$10,084**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$10,084
2.	Regular employer contributions	3,070
3.	Benefit payments and expenses	0
4.	Adjustments [1]	(93)
5.	Interest credited	945
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$14,006**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	6,722	5,752
Tier 2 General Service	0	0
Total	**$6,722**	**$5,752**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$6,468	$6,722	$254

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	20,413	12,500
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$20,413**	**$12,500**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$20,413**	**$12,500**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$19,824	$20,413	$589

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$20,413	$12,500
2. Actuarial value of assets	14,006	10,084
3. Unfunded accrued liability *(1. – 2.)*	6,407	2,416
4. Funded percentage *(2. ÷ 1.)*	69%	81%
5. Combined valuation payroll	$81,734	$67,239
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	8%	4%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($6,160)	($479)	($443)	($6,124)	($485)
December 31, 2015	$8,576	$621	$618	$8,573	$627
December 31, 2016	N/A	N/A	N/A	$3,958	$279
Total				**$6,407**	**$421**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$12,500
b. Normal cost at December 31, 2015 (excluding assumed expenses)	5,752
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	1,153
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	19,405
f. Change in actuarial accrued liability due to assumption, method, and plan changes	589
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	19,994
2. Actuarial accrued liability at December 31, 2016	20,413
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(419)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	10,084
b. Contributions for 2016[1]	3,070
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	871
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	14,025
5. Actuarial value of assets at December 31, 2016	14,006
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(19)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($438)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$2,416**
2. Expected increase	2,964
3. Liability (gain)/loss	419
4. Asset (gain)/loss	19
5. Change due to changes in assumptions, methods, and plan provisions	589
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$6,407**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	6,722	34,831	19.30%	5,752	30,900	18.61%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$6,722**	**$34,831**	**19.30%**	**$5,752**	**$30,900**	**18.61%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$6,407	$2,416
2. Next year's Tier 1/Tier 2 UAL payment	421	142
3. Combined valuation payroll	81,734	67,239
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.52%	0.21%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.30%	18.61%
b. Tier 1/Tier 2 UAL rate	0.52%	0.21%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	19.96%	18.97%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	15.14%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	15.14%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.03%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.03%
c. Funded percentage	69%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.33%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	11.81%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	18.47%
7. Advisory July 1, 2019 total pension rate, before adjustment	19.96%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(1.49%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	0.52%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(0.97%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	18.47%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	19.30%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.30%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	18.47%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.30%	18.61%
b. Tier 1/Tier 2 UAL rate	(0.97%)	(3.62%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	18.47%	15.14%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	34,831	34,831
Tier 1/Tier 2 valuation payroll	0	34,831	34,831
OPSRP valuation payroll	46,903	0	46,903
Combined valuation payroll	**$46,903**	**$34,831**	**$81,734**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	1	1	0	0	1	1
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	1	1
Active Members with previous service segments with the employer								
General Service	0	1	N/A	1	0	0	N/A	0
Police & Fire	0	2	N/A	2	0	1	N/A	1
Total	0	3	N/A	3	0	1	N/A	1
Dormant Members								
General Service	0	0	1	1	0	0	1	1
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	1	1
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**0**	**3**	**2**	**5**	**0**	**1**	**2**	**3**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Nehalem Bay Wastewater Agency/2724
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Nehalem Bay Wastewater Agency/2724

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Nehalem Bay Wastewater Agency -- #2724

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Nehalem Bay Wastewater Agency to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Nehalem Bay Wastewater Agency.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Nehalem Bay Wastewater Agency

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.48%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(2.07%)	(2.07%)	(2.07%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**15.97%**	**7.98%**	**12.71%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**16.46%**	**8.40%**	**13.13%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 86%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.41%	11.41%
Minimum 2019-2021 Rate	8.41%	5.41%
Maximum 2019-2021 Rate	14.41%	17.41%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,373,769	$1,556,184	$182,415	88%	$289,012	63%
12/31/2012	1,530,538	1,473,807	(56,731)	104%	328,849	(17%)
12/31/2013	1,718,009	1,554,879	(163,130)	110%	349,854	(47%)
12/31/2014	1,791,852	1,869,020	77,168	96%	374,854	21%
12/31/2015	1,790,526	1,982,332	191,806	90%	337,025	57%
12/31/2016	1,839,443	2,139,207	299,764	86%	402,363	75%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Nehalem Bay Wastewater Agency

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$299,764	$191,806
Allocated pooled OPSRP UAL	69,272	47,913
Side account	0	0
Net unfunded pension actuarial accrued liability	369,036	239,719
Combined valuation payroll	402,363	337,025
Net pension UAL as a percentage of payroll	92%	71%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($55)	$1,636

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$28,482	$26,861
Tier 1/Tier 2 valuation payroll	172,826	161,335
Tier 1/Tier 2 pension normal cost rate	16.48%	16.65%
Tier 1/ Tier 2 Actuarial accrued liability	$2,139,207	$1,982,332
Actuarial asset value	1,839,443	1,790,526
Tier 1/Tier 2 Unfunded actuarial accrued liability	299,764	191,806
Tier 1/ Tier 2 Funded status	86%	90%
Combined valuation payroll	$402,363	$337,025
Tier 1/Tier 2 UAL as a percentage of payroll	75%	57%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(2.07%)	(5.24%)
Tier 1/Tier 2 active members [1]	2	2
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	5	5

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	402,363	337,025
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$319,167	$302,422
2. Employer reserves	1,047,285	976,557
3. Benefits in force reserve	472,991	511,546
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,839,443**	**$1,790,526**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$1,790,526
2.	Regular employer contributions	1,316
3.	Benefit payments and expenses	(92,609)
4.	Adjustments [1]	15,759
5.	Interest credited	124,452
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,839,443**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	28,482	26,861
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$28,482**	**$26,861**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$28,430	$28,482	$52

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	1,022,170	877,806
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$1,022,170**	**$877,806**
Dormant Members	0	0
Retired Members and Beneficiaries	1,117,037	1,104,526
Total Actuarial Accrued Liability	**$2,139,207**	**$1,982,332**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,083,641	$2,139,207	$55,566

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$2,139,207	$1,982,332
2. Actuarial value of assets	1,839,443	1,790,526
3. Unfunded accrued liability *(1. – 2.)*	299,764	191,806
4. Funded percentage *(2. ÷ 1.)*	86%	90%
5. Combined valuation payroll	$402,363	$337,025
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	75%	57%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($163,004)	($12,674)	($11,719)	($162,049)	($12,843)
December 31, 2015	$354,810	$25,674	$25,585	$354,721	$25,956
December 31, 2016	N/A	N/A	N/A	$107,092	$7,561
Total				**$299,764**	**$20,674**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,982,332
b. Normal cost at December 31, 2015 (excluding assumed expenses)	25,618
c. Benefit payments during 2016	(91,830)
d. Interest at 7.50% to December 31, 2016	146,192
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,062,312
f. Change in actuarial accrued liability due to assumption, method, and plan changes	55,566
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	2,117,878
2. Actuarial accrued liability at December 31, 2016	2,139,207
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(21,329)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,790,526
b. Contributions for 2016[1]	1,316
c. Benefit payments and expenses during 2016	(92,609)
d. Interest at 7.50% to December 31, 2016	130,866
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,830,098
5. Actuarial value of assets at December 31, 2016	1,839,443
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	9,345
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($11,984)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$191,806**
2. Expected increase	40,408
3. Liability (gain)/loss	21,329
4. Asset (gain)/loss	(9,345)
5. Change due to changes in assumptions, methods, and plan provisions	55,566
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$299,764**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	28,482	172,826	16.48%	26,861	161,335	16.65%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$28,482**	**$172,826**	**16.48%**	**$26,861**	**$161,335**	**16.65%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$299,764	$191,806
2. Next year's Tier 1/Tier 2 UAL payment	20,674	13,000
3. Combined valuation payroll	402,363	337,025
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	5.14%	3.86%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.48%	16.65%
b. Tier 1/Tier 2 UAL rate	5.14%	3.86%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	21.76%	20.66%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	11.41%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.41%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.28%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	86%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	8.41%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	14.41%
7. Advisory July 1, 2019 total pension rate, before adjustment	21.76%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(7.35%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	5.14%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(2.21%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	14.41%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.48%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.48%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	14.41%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.48%	16.65%
b. Tier 1/Tier 2 UAL rate	(2.21%)	(5.39%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	14.41%	11.41%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$172,826	$0	$172,826
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	172,826	0	172,826
OPSRP valuation payroll	229,537	0	229,537
Combined valuation payroll	**$402,363**	**$0**	**$402,363**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	0	4	6	2	0	3	5
Police & Fire	0	0	0	0	0	0	0	0
Total	2	0	4	6	2	0	3	5
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	1	1
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	1
Retired Members and Beneficiaries								
General Service	5	0	1	6	5	0	0	5
Police & Fire	0	0	0	0	0	0	0	0
Total	5	0	1	6	5	0	0	5
Grand Total Number of Members	**7**	**0**	**5**	**12**	**7**	**0**	**4**	**11**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54						1				1
55-59						1				1
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	2	0	0	0	2

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	1,706
65-69	2	1,852
70-74	2	752
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	5	1,383

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Neskowin Regional Sanitary Authority/2740
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Neskowin Regional Sanitary Authority/2740

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Neskowin Regional Sanitary Authority -- #2740

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Neskowin Regional Sanitary Authority to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Neskowin Regional Sanitary Authority.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Neskowin Regional Sanitary Authority

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	14.16%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(3.31%)	(3.31%)	(3.31%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**12.41%**	**6.74%**	**11.47%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**12.90%**	**7.16%**	**11.89%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 130%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.03%	11.03%
Minimum 2019-2021 Rate	8.03%	5.03%
Maximum 2019-2021 Rate	14.03%	17.03%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$188,492	$141,097	($47,395)	134%	$171,129	(28%)
12/31/2012	215,562	162,032	(53,530)	133%	178,643	(30%)
12/31/2013	246,337	176,503	(69,834)	140%	183,027	(38%)
12/31/2014	258,803	192,267	(66,536)	135%	188,956	(35%)
12/31/2015	260,184	194,052	(66,132)	134%	195,204	(34%)
12/31/2016	278,266	213,820	(64,446)	130%	149,176	(43%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Neskowin Regional Sanitary Authority

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($64,446)	($66,132)
Allocated pooled OPSRP UAL	25,682	27,751
Side account	0	0
Net unfunded pension actuarial accrued liability	(38,764)	(38,381)
Combined valuation payroll	149,176	195,204
Net pension UAL as a percentage of payroll	(26%)	(20%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($20)	$948

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$8,027	$7,512
Tier 1/Tier 2 valuation payroll	56,669	55,563
Tier 1/Tier 2 pension normal cost rate	14.16%	13.52%
Tier 1/ Tier 2 Actuarial accrued liability	$213,820	$194,052
Actuarial asset value	278,266	260,184
Tier 1/Tier 2 Unfunded actuarial accrued liability	(64,446)	(66,132)
Tier 1/ Tier 2 Funded status	130%	134%
Combined valuation payroll	$149,176	$195,204
Tier 1/Tier 2 UAL as a percentage of payroll	(43%)	(34%)
Tier 1/Tier 2 UAL rate	(3.31%)	(2.49%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	2	2

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	149,176	195,204
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$23,300	$22,103
2. Employer reserves	242,578	224,870
3. Benefits in force reserve	12,389	13,211
4. Total market value of assets ***(1. + 2. + 3.)***	**$278,266**	**$260,184**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$260,184
2.	Regular employer contributions	1,744
3.	Benefit payments and expenses	(2,426)
4.	Adjustments [1]	141
5.	Interest credited	18,624
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$278,266**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	8,027	7,512
Total	**$8,027**	**$7,512**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$7,757	$8,027	$270

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	148,946	131,679
▪ **Total Active Members**	**$148,946**	**$131,679**
Dormant Members	35,617	33,847
Retired Members and Beneficiaries	29,257	28,526
Total Actuarial Accrued Liability	**$213,820**	**$194,052**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$209,978	$213,820	$3,842

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$213,820	$194,052
2. Actuarial value of assets	278,266	260,184
3. Unfunded accrued liability *(1. – 2.)*	(64,446)	(66,132)
4. Funded percentage *(2. ÷ 1.)*	130%	134%
5. Combined valuation payroll	$149,176	$195,204
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(43%)	(34%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($69,780)	($5,426)	($5,017)	($69,371)	($5,498)
December 31, 2015	$3,648	$264	$263	$3,647	$267
December 31, 2016	N/A	N/A	N/A	$1,278	$90
Total				**($64,446)**	**($5,141)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$194,052
b. Normal cost at December 31, 2015 (excluding assumed expenses)	7,164
c. Benefit payments during 2016	(2,405)
d. Interest at 7.50% to December 31, 2016	14,732
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	213,543
f. Change in actuarial accrued liability due to assumption, method, and plan changes	3,842
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	217,385
2. Actuarial accrued liability at December 31, 2016	213,820
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	3,565
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	260,184
b. Contributions for 2016[1]	1,744
c. Benefit payments and expenses during 2016	(2,426)
d. Interest at 7.50% to December 31, 2016	19,488
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	278,990
5. Actuarial value of assets at December 31, 2016	278,266
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(723)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$2,842**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($66,132)**
2. Expected increase	686
3. Liability (gain)/loss	(3,565)
4. Asset (gain)/loss	723
5. Change due to changes in assumptions, methods, and plan provisions	3,842
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($64,446)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	8,027	56,669	14.16%	7,512	55,563	13.52%
Total	**$8,027**	**$56,669**	**14.16%**	**$7,512**	**$55,563**	**13.52%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($64,446)	($66,132)
2. Next year's Tier 1/Tier 2 UAL payment	(5,141)	(5,162)
3. Combined valuation payroll	149,176	195,204
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(3.45%)	(2.64%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.16%	13.52%
b. Tier 1/Tier 2 UAL rate	(3.45%)	(2.64%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	10.85%	11.03%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	11.03%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.03%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.21%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	130%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	8.03%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	14.03%
7. Advisory July 1, 2019 total pension rate, before adjustment	10.85%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(3.45%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(3.45%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	10.85%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	14.16%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	14.16%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	10.85%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.16%	13.52%
b. Tier 1/Tier 2 UAL rate	(3.45%)	(2.64%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	10.85%	11.03%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	56,669	0	56,669
Tier 1/Tier 2 valuation payroll	56,669	0	56,669
OPSRP valuation payroll	92,507	0	92,507
Combined valuation payroll	**$149,176**	**$0**	**$149,176**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	2	3	0	1	3	4
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	2	3	0	1	3	4
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	1	0	1	2	1	0	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	1	2	1	0	0	1
Retired Members and Beneficiaries								
General Service	2	0	0	2	2	0	0	2
Police & Fire	0	0	0	0	0	0	0	0
Total	2	0	0	2	2	0	0	2
Grand Total Number of Members	**3**	**1**	**3**	**7**	**3**	**1**	**3**	**7**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64			1							**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64	1	214
65-69		
70-74		
75+		
Total	1	214

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	150
65-69		
70-74		
75-79	1	46
80-84		
85-89		
90-94		
95-99		
100+		
Total	2	98

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

North Clackamas County Water Commission/2835
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
North Clackamas County Water Commission/2835

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

North Clackamas County Water Commission -- #2835

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for North Clackamas County Water Commission to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to North Clackamas County Water Commission.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for North Clackamas County Water Commission

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	14.82%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	5.61%	5.61%	5.61%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**21.99%**	**15.66%**	**20.39%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**22.48%**	**16.08%**	**20.81%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 60%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	14.43%	14.43%
Minimum 2019-2021 Rate	11.43%	8.43%
Maximum 2019-2021 Rate	17.43%	20.43%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$267,657	$344,501	$76,844	78%	$232,626	33%
12/31/2012	324,353	435,475	111,122	74%	245,417	45%
12/31/2013	390,977	483,852	92,875	81%	242,904	38%
12/31/2014	434,442	612,972	178,530	71%	208,423	86%
12/31/2015	458,420	707,381	248,961	65%	256,006	97%
12/31/2016	503,083	835,502	332,419	60%	261,982	127%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

North Clackamas County Water Commission

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$332,419	$248,961
Allocated pooled OPSRP UAL	45,103	36,395
Side account	0	0
Net unfunded pension actuarial accrued liability	377,522	285,356
Combined valuation payroll	261,982	256,006
Net pension UAL as a percentage of payroll	144%	111%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($36)	$1,243

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$26,874	$25,618
Tier 1/Tier 2 valuation payroll	181,302	177,052
Tier 1/Tier 2 pension normal cost rate	14.82%	14.47%
Tier 1/ Tier 2 Actuarial accrued liability	$835,502	$707,381
Actuarial asset value	503,083	458,420
Tier 1/Tier 2 Unfunded actuarial accrued liability	332,419	248,961
Tier 1/ Tier 2 Funded status	60%	65%
Combined valuation payroll	$261,982	$256,006
Tier 1/Tier 2 UAL as a percentage of payroll	127%	97%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	5.61%	(0.04%)
Tier 1/Tier 2 active members [1]	2	2
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	261,982	256,006
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$96,081	$91,167
2. Employer reserves	407,002	367,253
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$503,083**	**$458,420**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$458,420
2.	Regular employer contributions	12,888
3.	Benefit payments and expenses	0
4.	Adjustments [1]	(1,896)
5.	Interest credited	33,671
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$503,083**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	12,924	12,389
Tier 2 Police & Fire	0	0
Tier 2 General Service	13,950	13,229
Total	**$26,874**	**$25,618**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$26,542	$26,874	$332

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	471,602	392,817
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	331,361	283,873
▪ **Total Active Members**	**$802,963**	**$676,690**
Dormant Members	32,539	30,691
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$835,502**	**$707,381**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$775,598	$835,502	$59,904

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$835,502	$707,381
2. Actuarial value of assets	503,083	458,420
3. Unfunded accrued liability *(1. – 2.)*	332,419	248,961
4. Funded percentage *(2. ÷ 1.)*	60%	65%
5. Combined valuation payroll	$261,982	$256,006
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	127%	97%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$92,803	$7,216	$6,672	$92,259	$7,312
December 31, 2015	$156,158	$11,299	$11,260	$156,119	$11,424
December 31, 2016	N/A	N/A	N/A	$84,041	$5,934
Total				**$332,419**	**$24,670**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$707,381
b. Normal cost at December 31, 2015 (excluding assumed expenses)	24,433
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	53,970
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	785,784
f. Change in actuarial accrued liability due to assumption, method, and plan changes	59,904
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	845,688
2. Actuarial accrued liability at December 31, 2016	835,502
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	10,186
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	458,420
b. Contributions for 2016[1]	12,888
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	34,865
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	506,173
5. Actuarial value of assets at December 31, 2016	503,083
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(3,090)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$7,096**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$248,961**
2. Expected increase	30,650
3. Liability (gain)/loss	(10,186)
4. Asset (gain)/loss	3,090
5. Change due to changes in assumptions, methods, and plan provisions	59,904
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$332,419**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	12,924	84,018	15.38%	12,389	81,265	15.25%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	13,950	97,284	14.34%	13,229	95,787	13.81%
Total	**$26,874**	**$181,302**	**14.82%**	**$25,618**	**$177,052**	**14.47%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$332,419	$248,961
2. Next year's Tier 1/Tier 2 UAL payment	24,670	18,515
3. Combined valuation payroll	261,982	256,006
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	9.42%	7.23%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.82%	14.47%
b. Tier 1/Tier 2 UAL rate	9.42%	7.23%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	24.38%	21.85%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	14.43%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	14.43%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.89%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	60%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	8.43%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	20.43%
7. Advisory July 1, 2019 total pension rate, before adjustment	24.38%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(3.95%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	9.42%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	5.47%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	20.43%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	14.82%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	14.82%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	20.43%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.82%	14.47%
b. Tier 1/Tier 2 UAL rate	5.47%	(0.19%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	20.43%	14.43%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$84,018	$0	$84,018
Tier 2	97,284	0	97,284
Tier 1/Tier 2 valuation payroll	181,302	0	181,302
OPSRP valuation payroll	80,680	0	80,680
Combined valuation payroll	**$261,982**	**$0**	**$261,982**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	1	1	3	1	1	1	3
Police & Fire	0	0	0	0	0	0	0	0
Total	1	1	1	3	1	1	1	3
Active Members with previous service segments with the employer								
General Service	1	1	N/A	2	1	1	N/A	2
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	1	N/A	2	1	1	N/A	2
Dormant Members								
General Service	1	0	0	1	1	0	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	0	1	1	0	0	1
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**3**	**2**	**1**	**6**	**3**	**2**	**1**	**6**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49						1				**1**
50-54										
55-59				1						**1**
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**2**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	1	243
55-59		
60-64		
65-69		
70-74		
75+		
Total	1	243

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

Milliman

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November 2017

Northeast Oregon Housing Authority/2637
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

Milliman

November 2017
Northeast Oregon Housing Authority/2637

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Northeast Oregon Housing Authority/2637

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA	Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary	Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Northeast Oregon Housing Authority -- #2637

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Northeast Oregon Housing Authority to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Northeast Oregon Housing Authority.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Northeast Oregon Housing Authority

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	17.97%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(2.40%)	(2.40%)	(2.40%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**17.13%**	**7.65%**	**12.38%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**17.62%**	**8.07%**	**12.80%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 70%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	12.57%	12.57%
Minimum 2019-2021 Rate	9.57%	6.57%
Maximum 2019-2021 Rate	15.57%	18.57%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$2,794,568	$3,360,981	$566,413	83%	$683,194	83%
12/31/2012	3,107,972	3,364,806	256,834	92%	703,856	36%
12/31/2013	3,340,344	3,620,147	279,803	92%	727,538	38%
12/31/2014	3,341,768	4,103,295	761,527	81%	755,052	101%
12/31/2015	3,184,383	4,221,502	1,037,119	75%	808,227	128%
12/31/2016	3,124,730	4,489,318	1,364,588	70%	774,143	176%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Northeast Oregon Housing Authority

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$1,364,588	$1,037,119
Allocated pooled OPSRP UAL	133,278	114,901
Side account	0	0
Net unfunded pension actuarial accrued liability	1,497,866	1,152,020
Combined valuation payroll	774,143	808,227
Net pension UAL as a percentage of payroll	193%	143%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($105)	$3,924

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$38,530	$46,517
Tier 1/Tier 2 valuation payroll	214,460	265,699
Tier 1/Tier 2 pension normal cost rate	17.97%	17.51%
Tier 1/ Tier 2 Actuarial accrued liability	$4,489,318	$4,221,502
Actuarial asset value	3,124,730	3,184,383
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,364,588	1,037,119
Tier 1/ Tier 2 Funded status	70%	75%
Combined valuation payroll	$774,143	$808,227
Tier 1/Tier 2 UAL as a percentage of payroll	176%	128%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(2.40%)	(4.94%)
Tier 1/Tier 2 active members [1]	3	4
Tier 1/Tier 2 dormant members	6	6
Tier 1/Tier 2 retirees and beneficiaries	10	9

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	774,143	808,227
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$454,150	$492,492
2. Employer reserves	1,461,687	1,532,085
3. Benefits in force reserve	1,208,893	1,159,806
4. Total market value of assets ***(1. + 2. + 3.)***	**$3,124,730**	**$3,184,383**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$3,184,383
2.	Regular employer contributions	(7,620)
3.	Benefit payments and expenses	(236,695)
4.	Adjustments [1]	(34,064)
5.	Interest credited	218,727
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$3,124,730**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	18,145	27,272
Tier 2 Police & Fire	0	0
Tier 2 General Service	20,385	19,245
Total	**$38,530**	**$46,517**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$38,211	$38,530	$319

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	550,366	727,481
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	415,800	368,604
▪ **Total Active Members**	**$966,166**	**$1,096,085**
Dormant Members	668,170	621,175
Retired Members and Beneficiaries	2,854,982	2,504,242
Total Actuarial Accrued Liability	**$4,489,318**	**$4,221,502**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$4,405,170	$4,489,318	$84,148

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$4,489,318	$4,221,502
2. Actuarial value of assets	3,124,730	3,184,383
3. Unfunded accrued liability *(1. – 2.)*	1,364,588	1,037,119
4. Funded percentage *(2. ÷ 1.)*	70%	75%
5. Combined valuation payroll	$774,143	$808,227
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	176%	128%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$279,587	$21,739	$20,101	$277,949	$22,028
December 31, 2015	$757,532	$54,814	$54,625	$757,343	$55,418
December 31, 2016	N/A	N/A	N/A	$329,296	$23,250
Total				**$1,364,588**	**$100,696**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$4,221,502
b. Normal cost at December 31, 2015 (excluding assumed expenses)	44,365
c. Benefit payments during 2016	(234,705)
d. Interest at 7.50% to December 31, 2016	309,475
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	4,340,637
f. Change in actuarial accrued liability due to assumption, method, and plan changes	84,148
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	4,424,785
2. Actuarial accrued liability at December 31, 2016	4,489,318
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(64,533)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	3,184,383
b. Contributions for 2016[1]	(7,620)
c. Benefit payments and expenses during 2016	(236,695)
d. Interest at 7.50% to December 31, 2016	229,667
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	3,169,734
5. Actuarial value of assets at December 31, 2016	3,124,730
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(45,004)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($109,537)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$1,037,119**
2. Expected increase	133,784
3. Liability (gain)/loss	64,533
4. Asset (gain)/loss	45,004
5. Change due to changes in assumptions, methods, and plan provisions	84,148
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$1,364,588**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	18,145	75,305	24.10%	27,272	128,574	21.21%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	20,385	139,155	14.65%	19,245	137,125	14.03%
Total	**$38,530**	**$214,460**	**17.97%**	**$46,517**	**$265,699**	**17.51%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$1,364,588	$1,037,119
2. Next year's Tier 1/Tier 2 UAL payment	100,696	76,553
3. Combined valuation payroll	774,143	808,227
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	13.01%	9.47%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.97%	17.51%
b. Tier 1/Tier 2 UAL rate	13.01%	9.47%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	31.12%	27.13%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	12.57%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	12.57%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.51%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	70%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	9.57%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	15.57%
7. Advisory July 1, 2019 total pension rate, before adjustment	31.12%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(15.55%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	13.01%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(2.54%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	15.57%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.97%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.97%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	15.57%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.97%	17.51%
b. Tier 1/Tier 2 UAL rate	(2.54%)	(5.09%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	15.57%	12.57%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$75,305	$0	$75,305
Tier 2	139,155	0	139,155
Tier 1/Tier 2 valuation payroll	214,460	0	214,460
OPSRP valuation payroll	559,683	0	559,683
Combined valuation payroll	**$774,143**	**$0**	**$774,143**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	2	15	18	2	2	15	19
Police & Fire	0	0	0	0	0	0	0	0
Total	1	2	15	18	2	2	15	19
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	5	1	1	7	5	1	1	7
Police & Fire	0	0	0	0	0	0	0	0
Total	5	1	1	7	5	1	1	7
Retired Members and Beneficiaries								
General Service	9	1	0	10	7	2	0	9
Police & Fire	0	0	0	0	0	0	0	0
Total	9	1	0	10	7	2	0	9
Grand Total Number of Members	**15**	**4**	**16**	**35**	**14**	**5**	**16**	**35**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64			1		1	1				**3**
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**3**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	1,716
50-54	1	114
55-59	3	689
60-64	1	1,310
65-69		
70-74		
75+		
Total	6	868

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	1,210
60-64		
65-69	8	2,059
70-74		
75-79		
80-84		
85-89	1	1,394
90-94		
95-99		
100+		
Total	10	1,907

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Nyssa Road Assessment District #2/2550
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Nyssa Road Assessment District #2/2550

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Nyssa Road Assessment District #2 -- #2550

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Nyssa Road Assessment District #2 to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Nyssa Road Assessment District #2.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Nyssa Road Assessment District #2

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	18.69%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	15.03%	15.03%	15.03%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**35.28%**	**25.08%**	**29.81%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**35.77%**	**25.50%**	**30.23%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 76%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	34.78%	34.78%
Minimum 2019-2021 Rate	27.82%	20.86%
Maximum 2019-2021 Rate	41.74%	48.70%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,003,416	$1,782,911	$779,495	56%	$162,497	480%
12/31/2012	1,092,540	1,592,557	500,017	69%	171,200	292%
12/31/2013	1,250,536	1,638,254	387,718	76%	175,770	221%
12/31/2014	1,328,253	1,887,894	559,641	70%	193,031	290%
12/31/2015	1,270,584	1,698,042	427,458	75%	216,210	198%
12/31/2016	1,354,694	1,783,660	428,966	76%	226,437	189%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Nyssa Road Assessment District #2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$428,966	$427,458
Allocated pooled OPSRP UAL	38,984	30,737
Side account	0	0
Net unfunded pension actuarial accrued liability	467,950	458,195
Combined valuation payroll	226,437	216,210
Net pension UAL as a percentage of payroll	207%	212%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($31)	$1,050

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$26,500	$25,494
Tier 1/Tier 2 valuation payroll	141,788	131,668
Tier 1/Tier 2 pension normal cost rate	18.69%	19.36%
Tier 1/ Tier 2 Actuarial accrued liability	$1,783,660	$1,698,042
Actuarial asset value	1,354,694	1,270,584
Tier 1/Tier 2 Unfunded actuarial accrued liability	428,966	427,458
Tier 1/ Tier 2 Funded status	76%	75%
Combined valuation payroll	$226,437	$216,210
Tier 1/Tier 2 UAL as a percentage of payroll	189%	198%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	15.03%	15.42%
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	5	5

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	226,437	216,210
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$319,096	$302,215
2. Employer reserves	626,642	524,425
3. Benefits in force reserve	408,955	443,943
4. Total market value of assets *(1. + 2. + 3.)*	**$1,354,694**	**$1,270,584**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$1,270,584
2. Regular employer contributions	60,540
3. Benefit payments and expenses	(80,071)
4. Adjustments [1]	11,498
5. Interest credited	92,144
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$1,354,694**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	18,779	18,209
Tier 2 Police & Fire	0	0
Tier 2 General Service	7,721	7,285
Total	**$26,500**	**$25,494**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$26,535	$26,500	($35)

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	607,178	556,925
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	72,199	50,642
▪ **Total Active Members**	**$679,377**	**$607,567**
Dormant Members	138,473	131,916
Retired Members and Beneficiaries	965,810	958,559
Total Actuarial Accrued Liability	**$1,783,660**	**$1,698,042**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,749,053	$1,783,660	$34,607

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,783,660	$1,698,042
2. Actuarial value of assets	1,354,694	1,270,584
3. Unfunded accrued liability *(1. – 2.)*	428,966	427,458
4. Funded percentage *(2. ÷ 1.)*	76%	75%
5. Combined valuation payroll	$226,437	$216,210
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	189%	198%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$387,419	$30,124	$27,853	$385,148	$30,524
December 31, 2015	$40,039	$2,897	$2,887	$40,029	$2,929
December 31, 2016	N/A	N/A	N/A	$3,789	$268
Total				**$428,966**	**$33,721**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,698,042
b. Normal cost at December 31, 2015 (excluding assumed expenses)	24,314
c. Benefit payments during 2016	(79,398)
d. Interest at 7.50% to December 31, 2016	125,288
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,768,246
f. Change in actuarial accrued liability due to assumption, method, and plan changes	34,607
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,802,853
2. Actuarial accrued liability at December 31, 2016	1,783,660
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	19,193
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,270,584
b. Contributions for 2016[1]	60,540
c. Benefit payments and expenses during 2016	(80,071)
d. Interest at 7.50% to December 31, 2016	94,561
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,345,613
5. Actuarial value of assets at December 31, 2016	1,354,694
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	9,080
7. Total actuarial gain/(loss) *(3. + 6.)*	**$28,273**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$427,458**
2. Expected increase	(4,826)
3. Liability (gain)/loss	(19,193)
4. Asset (gain)/loss	(9,080)
5. Change due to changes in assumptions, methods, and plan provisions	34,607
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$428,966**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	18,779	82,899	22.65%	18,209	74,702	24.38%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	7,721	58,889	13.11%	7,285	56,966	12.79%
Total	**$26,500**	**$141,788**	**18.69%**	**$25,494**	**$131,668**	**19.36%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$428,966	$427,458
2. Next year's Tier 1/Tier 2 UAL payment	33,721	33,021
3. Combined valuation payroll	226,437	216,210
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	14.89%	15.27%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.69%	19.36%
b. Tier 1/Tier 2 UAL rate	14.89%	15.27%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	33.72%	34.78%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	34.78%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	34.78%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	6.96%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	6.96%
c. Funded percentage	76%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.96%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	27.82%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	41.74%
7. Advisory July 1, 2019 total pension rate, before adjustment	33.72%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	14.89%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	14.89%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	33.72%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	18.69%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	18.69%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	33.72%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.69%	19.36%
b. Tier 1/Tier 2 UAL rate	14.89%	15.27%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	33.72%	34.78%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$82,899	$0	$82,899
Tier 2	58,889	0	58,889
Tier 1/Tier 2 valuation payroll	141,788	0	141,788
OPSRP valuation payroll	84,649	0	84,649
Combined valuation payroll	**$226,437**	**$0**	**$226,437**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	1	2	5	2	1	2	5
Police & Fire	0	0	0	0	0	0	0	0
Total	2	1	2	5	2	1	2	5
Active Members with previous service segments with the employer								
General Service	1	0	N/A	1	1	0	N/A	1
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	0	N/A	1	1	0	N/A	1
Dormant Members								
General Service	1	0	1	2	1	0	1	2
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	1	2	1	0	1	2
Retired Members and Beneficiaries								
General Service	5	0	0	5	5	0	0	5
Police & Fire	0	0	0	0	0	0	0	0
Total	5	0	0	5	5	0	0	5
Grand Total Number of Members	**9**	**1**	**3**	**13**	**9**	**1**	**3**	**13**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54				1						**1**
55-59										
60-64					1					**1**
65-69						1				**1**
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	**3**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64	1	845
65-69		
70-74		
75+		
Total	1	845

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	51
65-69		
70-74		
75-79	1	197
80-84	2	4,605
85-89		
90-94	1	175
95-99		
100+		
Total	5	1,926

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Oak Lodge Sanitary District/2524
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Oak Lodge Sanitary District/2524

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Oak Lodge Sanitary District -- #2524

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Oak Lodge Sanitary District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Oak Lodge Sanitary District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Oak Lodge Sanitary District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	10.92%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	7.42%	7.42%	7.42%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**19.90%**	**17.47%**	**22.20%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**20.39%**	**17.89%**	**22.62%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 73%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	15.28%	15.28%
Minimum 2019-2021 Rate	12.22%	9.16%
Maximum 2019-2021 Rate	18.34%	21.40%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$7,106,323	$9,259,870	$2,153,547	77%	$1,814,102	119%
12/31/2012	7,723,464	9,061,693	1,338,229	85%	1,870,816	72%
12/31/2013	8,219,096	9,066,220	847,124	91%	1,921,520	44%
12/31/2014	8,520,732	10,729,670	2,208,938	79%	2,014,729	110%
12/31/2015	8,437,646	11,091,470	2,653,824	76%	2,075,567	128%
12/31/2016	8,197,921	11,267,370	3,069,449	73%	1,775,935	173%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Oak Lodge Sanitary District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$3,069,449	$2,653,824
Allocated pooled OPSRP UAL	305,749	295,071
Side account	0	0
Net unfunded pension actuarial accrued liability	3,375,198	2,948,895
Combined valuation payroll	1,775,935	2,075,567
Net pension UAL as a percentage of payroll	190%	142%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($242)	$10,078

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$95,554	$134,338
Tier 1/Tier 2 valuation payroll	875,338	1,062,073
Tier 1/Tier 2 pension normal cost rate	10.92%	12.65%
Tier 1/ Tier 2 Actuarial accrued liability	$11,267,370	$11,091,470
Actuarial asset value	8,197,921	8,437,646
Tier 1/Tier 2 Unfunded actuarial accrued liability	3,069,449	2,653,824
Tier 1/ Tier 2 Funded status	73%	76%
Combined valuation payroll	$1,775,935	$2,075,567
Tier 1/Tier 2 UAL as a percentage of payroll	173%	128%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	7.42%	2.63%
Tier 1/Tier 2 active members [1]	9	11
Tier 1/Tier 2 dormant members	4	6
Tier 1/Tier 2 retirees and beneficiaries	21	19

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,775,935	2,075,567
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$779,777	$1,056,669
2. Employer reserves	4,051,279	4,166,845
3. Benefits in force reserve	3,366,865	3,214,132
4. Total market value of assets ***(1. + 2. + 3.)***	**$8,197,921**	**$8,437,646**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$8,437,646
2. Regular employer contributions	131,917
3. Benefit payments and expenses	(659,215)
4. Adjustments [1]	(289,452)
5. Interest credited	577,025
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$8,197,921**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	21,833	66,745
Tier 2 Police & Fire	0	0
Tier 2 General Service	73,721	67,593
Total	**$95,554**	**$134,338**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$93,383	$95,554	$2,171

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	1,069,600	1,443,280
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	1,543,298	1,282,629
▪ **Total Active Members**	**$2,612,898**	**$2,725,909**
Dormant Members	703,117	1,425,634
Retired Members and Beneficiaries	7,951,355	6,939,927
Total Actuarial Accrued Liability	**$11,267,370**	**$11,091,470**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$11,021,279	$11,267,370	$246,091

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$11,267,370	$11,091,470
2. Actuarial value of assets	8,197,921	8,437,646
3. Unfunded accrued liability *(1. – 2.)*	3,069,449	2,653,824
4. Funded percentage *(2. ÷ 1.)*	73%	76%
5. Combined valuation payroll	$1,775,935	$2,075,567
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	173%	128%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$846,470	$65,817	$60,856	$841,509	$66,691
December 31, 2015	$1,807,354	$130,778	$130,327	$1,806,903	$132,219
December 31, 2016	N/A	N/A	N/A	$421,037	$29,728
Total				**$3,069,449**	**$228,638**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$11,091,470
b. Normal cost at December 31, 2015 (excluding assumed expenses)	128,123
c. Benefit payments during 2016	(653,672)
d. Interest at 7.50% to December 31, 2016	812,152
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	11,378,073
f. Change in actuarial accrued liability due to assumption, method, and plan changes	246,091
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	11,624,164
2. Actuarial accrued liability at December 31, 2016	11,267,370
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	356,794
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	8,437,646
b. Contributions for 2016[1]	131,917
c. Benefit payments and expenses during 2016	(659,215)
d. Interest at 7.50% to December 31, 2016	613,050
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	8,523,397
5. Actuarial value of assets at December 31, 2016	8,197,921
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(325,477)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$31,317**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$2,653,824**
2. Expected increase	200,851
3. Liability (gain)/loss	(356,794)
4. Asset (gain)/loss	325,477
5. Change due to changes in assumptions, methods, and plan provisions	246,091
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$3,069,449**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	21,833	214,645	10.17%	66,745	458,662	14.55%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	73,721	660,693	11.16%	67,593	603,411	11.20%
Total	**$95,554**	**$875,338**	**10.92%**	**$134,338**	**$1,062,073**	**12.65%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$3,069,449	$2,653,824
2. Next year's Tier 1/Tier 2 UAL payment	228,638	196,595
3. Combined valuation payroll	1,775,935	2,075,567
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	12.87%	9.47%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	10.92%	12.65%
b. Tier 1/Tier 2 UAL rate	12.87%	9.47%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	23.93%	22.27%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	15.28%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	15.28%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.06%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.06%
c. Funded percentage	73%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.06%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	12.22%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	18.34%
7. Advisory July 1, 2019 total pension rate, before adjustment	23.93%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(5.59%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	12.87%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	7.28%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	18.34%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	10.92%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	10.92%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	18.34%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	10.92%	12.65%
b. Tier 1/Tier 2 UAL rate	7.28%	2.48%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	18.34%	15.28%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$214,645	$0	$214,645
Tier 2	660,693	0	660,693
Tier 1/Tier 2 valuation payroll	875,338	0	875,338
OPSRP valuation payroll	900,597	0	900,597
Combined valuation payroll	**$1,775,935**	**$0**	**$1,775,935**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	7	11	20	4	7	12	23
Police & Fire	0	0	0	0	0	0	0	0
Total	2	7	11	20	4	7	12	23
Active Members with previous service segments with the employer								
General Service	7	3	N/A	10	7	3	N/A	10
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	7	3	N/A	10	7	3	N/A	10
Dormant Members								
General Service	2	2	2	6	4	2	1	7
Police & Fire	0	0	0	0	0	0	0	0
Total	2	2	2	6	4	2	1	7
Retired Members and Beneficiaries								
General Service	20	1	0	21	16	3	0	19
Police & Fire	0	0	0	0	0	0	0	0
Total	20	1	0	21	16	3	0	19
Grand Total Number of Members	**31**	**13**	**13**	**57**	**31**	**15**	**13**	**59**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39			1							1
40-44			1		1					2
45-49				1						1
50-54				1						1
55-59				1	2					3
60-64				1						1
65-69										
70-74										
75+										
Total	0	0	2	4	3	0	0	0	0	9

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	0
45-49		
50-54	1	974
55-59	1	2,202
60-64		
65-69	1	2,395
70-74		
75+		
Total	4	1,393

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	3,413
60-64	3	707
65-69	10	3,226
70-74	2	1,746
75-79	3	1,946
80-84	1	3,430
85-89		
90-94	1	2,797
95-99		
100+		
Total	21	2,540

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Oregon Community College Association/2685
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Oregon Community College Association/2685

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Oregon Community College Association -- #2685

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Oregon Community College Association to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Oregon Community College Association.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Oregon Community College Association

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	11.72%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(0.25%)	(0.25%)	(0.25%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**13.03%**	**9.80%**	**14.53%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**13.52%**	**10.22%**	**14.95%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 95%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	8.47%	8.47%
Minimum 2019-2021 Rate	5.47%	2.47%
Maximum 2019-2021 Rate	11.47%	14.47%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,413,315	$1,307,049	($106,266)	108%	$361,227	(29%)
12/31/2012	1,581,197	1,310,878	(270,319)	121%	379,961	(71%)
12/31/2013	1,769,162	1,361,219	(407,943)	130%	373,823	(109%)
12/31/2014	1,843,244	1,631,176	(212,068)	113%	622,484	(34%)
12/31/2015	1,832,813	1,754,979	(77,834)	104%	578,412	(13%)
12/31/2016	1,823,893	1,923,445	99,552	95%	558,209	18%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Oregon Community College Association

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	$99,552	($77,834)
Allocated pooled OPSRP UAL	96,102	82,229
Side account	0	0
Net unfunded pension actuarial accrued liability	195,654	4,395
Combined valuation payroll	558,209	578,412
Net pension UAL as a percentage of payroll	35%	1%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($76)	$2,809

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$26,671	$24,330
Tier 1/Tier 2 valuation payroll	227,476	209,731
Tier 1/Tier 2 pension normal cost rate	11.72%	11.60%
Tier 1/ Tier 2 Actuarial accrued liability	$1,923,445	$1,754,979
Actuarial asset value	1,823,893	1,832,813
Tier 1/Tier 2 Unfunded actuarial accrued liability	99,552	(77,834)
Tier 1/ Tier 2 Funded status	95%	104%
Combined valuation payroll	$558,209	$578,412
Tier 1/Tier 2 UAL as a percentage of payroll	18%	(13%)
Tier 1/Tier 2 UAL rate	(0.25%)	(3.13%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	2	2
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	7	6

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	558,209	578,412
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$218,430	$275,102
2. Employer reserves	1,208,537	1,214,236
3. Benefits in force reserve	396,926	343,474
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,823,893**	**$1,832,813**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$1,832,813
2.	Regular employer contributions	(14,297)
3.	Benefit payments and expenses	(77,716)
4.	Adjustments [1]	(42,169)
5.	Interest credited	125,263
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,823,893**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	26,671	24,330
Total	**$26,671**	**$24,330**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$26,213	$26,671	$458

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	160,429	299,960
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	825,616	713,392
▪ **Total Active Members**	**$986,045**	**$1,013,352**
Dormant Members	0	0
Retired Members and Beneficiaries	937,400	741,627
Total Actuarial Accrued Liability	**$1,923,445**	**$1,754,979**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,898,709	$1,923,445	$24,736

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,923,445	$1,754,979
2. Actuarial value of assets	1,823,893	1,832,813
3. Unfunded accrued liability *(1. – 2.)*	99,552	(77,834)
4. Funded percentage *(2. ÷ 1.)*	95%	104%
5. Combined valuation payroll	$558,209	$578,412
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	18%	(13%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($407,628)	($31,695)	($29,306)	($405,239)	($32,116)
December 31, 2015	$329,794	$23,864	$23,781	$329,711	$24,126
December 31, 2016	N/A	N/A	N/A	$175,080	$12,362
Total				**$99,552**	**$4,372**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,754,979
b. Normal cost at December 31, 2015 (excluding assumed expenses)	23,204
c. Benefit payments during 2016	(77,063)
d. Interest at 7.50% to December 31, 2016	129,604
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,830,724
f. Change in actuarial accrued liability due to assumption, method, and plan changes	24,736
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,855,460
2. Actuarial accrued liability at December 31, 2016	1,923,445
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(67,985)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,832,813
b. Contributions for 2016[1]	(14,297)
c. Benefit payments and expenses during 2016	(77,716)
d. Interest at 7.50% to December 31, 2016	134,010
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,874,810
5. Actuarial value of assets at December 31, 2016	1,823,893
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(50,917)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($118,902)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($77,834)**
2. Expected increase	33,748
3. Liability (gain)/loss	67,985
4. Asset (gain)/loss	50,917
5. Change due to changes in assumptions, methods, and plan provisions	24,736
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$99,552**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	26,671	227,476	11.72%	24,330	209,731	11.60%
Total	**$26,671**	**$227,476**	**11.72%**	**$24,330**	**$209,731**	**11.60%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$99,552	($77,834)
2. Next year's Tier 1/Tier 2 UAL payment	4,372	(7,831)
3. Combined valuation payroll	558,209	578,412
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.78%	(1.35%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.72%	11.60%
b. Tier 1/Tier 2 UAL rate	0.78%	(1.35%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	12.64%	10.40%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	8.47%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	8.47%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.69%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	95%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	5.47%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	11.47%
7. Advisory July 1, 2019 total pension rate, before adjustment	12.64%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(1.17%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	0.78%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(0.39%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	11.47%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.72%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.72%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	11.47%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.72%	11.60%
b. Tier 1/Tier 2 UAL rate	(0.39%)	(3.28%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate	11.47%	8.47%
(a. + b. + c., minimum of 5.51%)		

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	227,476	0	227,476
Tier 1/Tier 2 valuation payroll	227,476	0	227,476
OPSRP valuation payroll	330,733	0	330,733
Combined valuation payroll	**$558,209**	**$0**	**$558,209**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	2	4	6	0	2	5	7
Police & Fire	0	0	0	0	0	0	0	0
Total	0	2	4	6	0	2	5	7
Active Members with previous service segments with the employer								
General Service	3	4	N/A	7	4	4	N/A	8
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	3	4	N/A	7	4	4	N/A	8
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	7	0	1	8	6	0	1	7
Police & Fire	0	0	0	0	0	0	0	0
Total	7	0	1	8	6	0	1	7
Grand Total Number of Members	**10**	**6**	**5**	**21**	**10**	**6**	**6**	**22**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54				2						2
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	2	0	0	0	0	0	2

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	3	707
65-69	2	1,298
70-74		
75-79	1	1,076
80-84	1	559
85-89		
90-94		
95-99		
100+		
Total	7	908

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Oregon Municipal Electric Utilities Association/2876
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Oregon Municipal Electric Utilities Association/2876

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Oregon Municipal Electric Utilities Association -- #2876

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Oregon Municipal Electric Utilities Association to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Oregon Municipal Electric Utilities Association.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Oregon Municipal Electric Utilities Association

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	12.13%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	0.58%	0.58%	0.58%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**14.27%**	**10.63%**	**15.36%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**14.76%**	**11.05%**	**15.78%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 90%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.67%	11.67%
Minimum 2019-2021 Rate	8.67%	5.67%
Maximum 2019-2021 Rate	14.67%	17.67%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$0	$0	$0	0%	$0	0%
12/31/2012	5,029	4,809	(220)	105%	92,028	0%
12/31/2013	18,644	14,353	(4,291)	130%	99,464	(4%)
12/31/2014	35,378	28,880	(6,498)	123%	97,533	(7%)
12/31/2015	48,729	42,142	(6,587)	116%	99,935	(7%)
12/31/2016	63,057	70,436	7,379	90%	109,019	7%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Oregon Municipal Electric Utilities Association

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$7,379	($6,587)
Allocated pooled OPSRP UAL	18,769	14,207
Side account	0	0
Net unfunded pension actuarial accrued liability	26,148	7,620
Combined valuation payroll	109,019	99,935
Net pension UAL as a percentage of payroll	24%	8%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($15)	$485

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$13,228	$12,011
Tier 1/Tier 2 valuation payroll	109,019	99,935
Tier 1/Tier 2 pension normal cost rate	12.13%	12.02%
Tier 1/ Tier 2 Actuarial accrued liability	$70,436	$42,142
Actuarial asset value	63,057	48,729
Tier 1/Tier 2 Unfunded actuarial accrued liability	7,379	(6,587)
Tier 1/ Tier 2 Funded status	90%	116%
Combined valuation payroll	$109,019	$99,935
Tier 1/Tier 2 UAL as a percentage of payroll	7%	(7%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	0.58%	(0.35%)
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	109,019	99,935
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	63,057	48,729
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$63,057**	**$48,729**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$48,729
2. Regular employer contributions	10,235
3. Benefit payments and expenses	0
4. Adjustments [1]	(123)
5. Interest credited	4,217
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$63,057**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	13,228	12,011
Total	**$13,228**	**$12,011**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$12,968	$13,228	$260

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	70,436	42,142
▪ **Total Active Members**	**$70,436**	**$42,142**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$70,436**	**$42,142**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$60,446	$70,436	$9,990

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$70,436	$42,142
2. Actuarial value of assets	63,057	48,729
3. Unfunded accrued liability *(1. – 2.)*	7,379	(6,587)
4. Funded percentage *(2. ÷ 1.)*	90%	116%
5. Combined valuation payroll	$109,019	$99,935
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	7%	(7%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($4,288)	($333)	($308)	($4,263)	($338)
December 31, 2015	($2,299)	($166)	($166)	($2,299)	($168)
December 31, 2016	N/A	N/A	N/A	$13,941	$984
Total				**$7,379**	**$478**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$42,142
b. Normal cost at December 31, 2015 (excluding assumed expenses)	11,455
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	3,590
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	57,187
f. Change in actuarial accrued liability due to assumption, method, and plan changes	9,990
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	67,177
2. Actuarial accrued liability at December 31, 2016	70,436
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(3,259)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	48,729
b. Contributions for 2016[1]	10,235
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	4,038
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	63,002
5. Actuarial value of assets at December 31, 2016	63,057
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	56
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($3,203)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($6,587)**
2. Expected increase	773
3. Liability (gain)/loss	3,259
4. Asset (gain)/loss	(56)
5. Change due to changes in assumptions, methods, and plan provisions	9,990
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$7,379**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	13,228	109,019	12.13%	12,011	99,935	12.02%
Total	**$13,228**	**$109,019**	**12.13%**	**$12,011**	**$99,935**	**12.02%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$7,379	($6,587)
2. Next year's Tier 1/Tier 2 UAL payment	478	(499)
3. Combined valuation payroll	109,019	99,935
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.44%	(0.50%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.13%	12.02%
b. Tier 1/Tier 2 UAL rate	0.44%	(0.50%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	12.71%	11.67%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	11.67%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.67%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.33%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	90%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	8.67%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	14.67%
7. Advisory July 1, 2019 total pension rate, before adjustment	12.71%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	0.44%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.44%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	12.71%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	12.13%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	12.13%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	12.71%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.13%	12.02%
b. Tier 1/Tier 2 UAL rate	0.44%	(0.50%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	12.71%	11.67%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	109,019	0	109,019
Tier 1/Tier 2 valuation payroll	109,019	0	109,019
OPSRP valuation payroll	0	0	0
Combined valuation payroll	**$109,019**	**$0**	**$109,019**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	0	1	0	1	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	1	0	1
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54				1						1
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	1	0	0	0	0	0	1

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Owyhee Irrigation District/2533
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Owyhee Irrigation District/2533

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Owyhee Irrigation District -- #2533

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Owyhee Irrigation District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Owyhee Irrigation District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Owyhee Irrigation District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.59%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	15.22%	15.22%	15.22%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**33.37%**	**25.27%**	**30.00%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**33.86%**	**25.69%**	**30.42%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 71%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	26.51%	26.51%
Minimum 2019-2021 Rate	21.21%	15.91%
Maximum 2019-2021 Rate	31.81%	37.11%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$5,806,866	$8,836,456	$3,029,590	66%	$1,230,438	246%
12/31/2012	6,153,054	8,361,630	2,208,576	74%	1,221,590	181%
12/31/2013	7,013,954	8,601,934	1,587,980	82%	1,350,553	118%
12/31/2014	6,932,463	9,470,845	2,538,382	73%	1,286,014	197%
12/31/2015	6,802,734	9,512,700	2,709,966	72%	1,333,645	203%
12/31/2016	7,072,081	9,926,256	2,854,175	71%	1,373,089	208%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Owyhee Irrigation District

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	$2,854,175	$2,709,966
Allocated pooled OPSRP UAL	236,394	189,596
Side account	0	0
Net unfunded pension actuarial accrued liability	3,090,569	2,899,562
Combined valuation payroll	1,373,089	1,333,645
Net pension UAL as a percentage of payroll	225%	217%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($187)	$6,476

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$108,862	$103,528
Tier 1/Tier 2 valuation payroll	656,256	635,727
Tier 1/Tier 2 pension normal cost rate	16.59%	16.28%
Tier 1/ Tier 2 Actuarial accrued liability	$9,926,256	$9,512,700
Actuarial asset value	7,072,081	6,802,734
Tier 1/Tier 2 Unfunded actuarial accrued liability	2,854,175	2,709,966
Tier 1/ Tier 2 Funded status	71%	72%
Combined valuation payroll	$1,373,089	$1,333,645
Tier 1/Tier 2 UAL as a percentage of payroll	208%	203%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	15.22%	10.23%
Tier 1/Tier 2 active members [1]	13	13
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	28	28

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,373,089	1,333,645
3. Average Amortization factor	8.994	9.504
4. Total side account rate ***(-1. ÷ 2. ÷ 3.)*** [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$1,024,023	$969,428
2. Employer reserves	3,273,817	2,851,308
3. Benefits in force reserve	2,774,242	2,981,998
4. Total market value of assets ***(1. + 2. + 3.)***	**$7,072,081**	**$6,802,734**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$6,802,734
2.	Regular employer contributions	205,260
3.	Benefit payments and expenses	(543,183)
4.	Adjustments [1]	126,333
5.	Interest credited	480,937
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$7,072,081**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	78,635	74,948
Tier 2 Police & Fire	0	0
Tier 2 General Service	30,227	28,580
Total	**$108,862**	**$103,528**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$107,662	$108,862	$1,200

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	2,427,310	2,192,382
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	627,500	565,246
▪ **Total Active Members**	**$3,054,810**	**$2,757,628**
Dormant Members	319,658	316,368
Retired Members and Beneficiaries	6,551,788	6,438,704
Total Actuarial Accrued Liability	**$9,926,256**	**$9,512,700**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$9,691,173	$9,926,256	$235,083

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$9,926,256	$9,512,700
2. Actuarial value of assets	7,072,081	6,802,734
3. Unfunded accrued liability *(1. – 2.)*	2,854,175	2,709,966
4. Funded percentage *(2. ÷ 1.)*	71%	72%
5. Combined valuation payroll	$1,373,089	$1,333,645
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	208%	203%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$1,586,754	$123,377	$114,078	$1,577,455	$125,016
December 31, 2015	$1,123,212	$81,274	$80,994	$1,122,932	$82,170
December 31, 2016	N/A	N/A	N/A	$153,788	$10,858
Total				**$2,854,175**	**$218,044**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$9,512,700
b. Normal cost at December 31, 2015 (excluding assumed expenses)	98,708
c. Benefit payments during 2016	(538,615)
d. Interest at 7.50% to December 31, 2016	696,956
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	9,769,749
f. Change in actuarial accrued liability due to assumption, method, and plan changes	235,083
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	10,004,832
2. Actuarial accrued liability at December 31, 2016	9,926,256
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	78,576
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	6,802,734
b. Contributions for 2016[1]	205,260
c. Benefit payments and expenses during 2016	(543,183)
d. Interest at 7.50% to December 31, 2016	497,533
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	6,962,344
5. Actuarial value of assets at December 31, 2016	7,072,081
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	109,737
7. Total actuarial gain/(loss) *(3. + 6.)*	**$188,313**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$2,709,966**
2. Expected increase	97,439
3. Liability (gain)/loss	(78,576)
4. Asset (gain)/loss	(109,737)
5. Change due to changes in assumptions, methods, and plan provisions	235,083
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$2,854,175**

1 *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	78,635	435,704	18.05%	74,948	416,977	17.97%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	30,227	220,552	13.71%	28,580	218,750	13.07%
Total	**$108,862**	**$656,256**	**16.59%**	**$103,528**	**$635,727**	**16.28%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$2,854,175	$2,709,966
2. Next year's Tier 1/Tier 2 UAL payment	218,044	204,651
3. Combined valuation payroll	1,373,089	1,333,645
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	15.88%	15.35%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.59%	16.28%
b. Tier 1/Tier 2 UAL rate	15.88%	15.35%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	32.61%	31.78%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	26.51%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	26.51%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	5.30%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	5.30%
c. Funded percentage	71%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	5.30%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	21.21%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	31.81%
7. Advisory July 1, 2019 total pension rate, before adjustment	32.61%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.80%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	15.88%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	15.08%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	31.81%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.59%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.59%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	31.81%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.59%	16.28%
b. Tier 1/Tier 2 UAL rate	15.08%	10.08%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	31.81%	26.51%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$435,704	$0	$435,704
Tier 2	220,552	0	220,552
Tier 1/Tier 2 valuation payroll	656,256	0	656,256
OPSRP valuation payroll	716,833	0	716,833
Combined valuation payroll	**$1,373,089**	**$0**	**$1,373,089**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	9	4	19	32	9	4	18	31
Police & Fire	0	0	0	0	0	0	0	0
Total	9	4	19	32	9	4	18	31
Active Members with previous service segments with the employer								
General Service	3	1	N/A	4	3	1	N/A	4
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	3	1	N/A	4	3	1	N/A	4
Dormant Members								
General Service	1	0	1	2	1	0	1	2
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	1	2	1	0	1	2
Retired Members and Beneficiaries								
General Service	26	2	2	30	26	2	1	29
Police & Fire	0	0	0	0	0	0	0	0
Total	26	2	2	30	26	2	1	29
Grand Total Number of Members	**39**	**7**	**22**	**68**	**39**	**7**	**20**	**66**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44				1						**1**
45-49										
50-54				1		1	1			**3**
55-59					2	1				**3**
60-64			1	1	1	2				**5**
65-69						1				**1**
70-74										
75+										
Total	**0**	**0**	**1**	**3**	**3**	**5**	**1**	**0**	**0**	**13**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64	1	1,964
65-69		
70-74		
75+		
Total	1	1,964

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	2,850
60-64	2	2,770
65-69	2	3,723
70-74	7	1,160
75-79	7	1,863
80-84	7	1,206
85-89		
90-94	2	579
95-99		
100+		
Total	28	1,664

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members’ regular account balances. 7.20% compounded annually on members’ variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Polk County Fire District #1/2688
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Polk County Fire District #1/2688

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Polk County Fire District #1 -- #2688

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Polk County Fire District #1 to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Polk County Fire District #1.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Polk County Fire District #1

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.43%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	5.48%	5.48%	5.48%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**26.47%**	**15.53%**	**20.26%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**26.96%**	**15.95%**	**20.68%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 72%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	20.76%	20.76%
Minimum 2019-2021 Rate	16.61%	12.46%
Maximum 2019-2021 Rate	24.91%	29.06%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$2,877,755	$3,340,925	$463,170	86%	$1,112,055	42%
12/31/2012	3,362,223	3,697,465	335,242	91%	1,132,943	30%
12/31/2013	3,617,028	4,043,451	426,423	89%	924,111	46%
12/31/2014	3,853,496	4,937,704	1,084,208	78%	979,822	111%
12/31/2015	3,877,835	5,265,161	1,387,326	74%	1,125,528	123%
12/31/2016	4,166,713	5,753,630	1,586,917	72%	1,051,563	151%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Polk County Fire District #1

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$1,586,917	$1,387,326
Allocated pooled OPSRP UAL	181,039	160,009
Side account	0	0
Net unfunded pension actuarial accrued liability	1,767,956	1,547,335
Combined valuation payroll	1,051,563	1,125,528
Net pension UAL as a percentage of payroll	168%	137%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($143)	$5,465

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$116,537	$108,775
Tier 1/Tier 2 valuation payroll	599,661	585,831
Tier 1/Tier 2 pension normal cost rate	19.43%	18.57%
Tier 1/ Tier 2 Actuarial accrued liability	$5,753,630	$5,265,161
Actuarial asset value	4,166,713	3,877,835
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,586,917	1,387,326
Tier 1/ Tier 2 Funded status	72%	74%
Combined valuation payroll	$1,051,563	$1,125,528
Tier 1/Tier 2 UAL as a percentage of payroll	151%	123%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	5.48%	2.19%
Tier 1/Tier 2 active members [1]	7	7
Tier 1/Tier 2 dormant members	6	7
Tier 1/Tier 2 retirees and beneficiaries	16	16

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) RHIA	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,051,563	1,125,528
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$311,067	$293,886
2. Employer reserves	3,025,547	2,705,951
3. Benefits in force reserve	830,099	877,997
4. Total market value of assets ***(1. + 2. + 3.)***	**$4,166,713**	**$3,877,835**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$3,877,835
2.	Regular employer contributions	118,820
3.	Benefit payments and expenses	(162,529)
4.	Adjustments [1]	51,441
5.	Interest credited	281,147
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$4,166,713**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	105,331	98,416
Tier 2 General Service	11,206	10,359
Total	**$116,537**	**$108,775**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$112,258	$116,537	$4,279

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$814,769	$743,361
▪ Tier 1 General Service	309,982	285,859
▪ Tier 2 Police & Fire	1,831,148	1,571,876
▪ Tier 2 General Service	160,955	132,595
▪ **Total Active Members**	**$3,116,854**	**$2,733,691**
Dormant Members	676,373	635,706
Retired Members and Beneficiaries	1,960,403	1,895,764
Total Actuarial Accrued Liability	**$5,753,630**	**$5,265,161**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$5,590,544	$5,753,630	$163,086

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$5,753,630	$5,265,161
2. Actuarial value of assets	4,166,713	3,877,835
3. Unfunded accrued liability *(1. – 2.)*	1,586,917	1,387,326
4. Funded percentage *(2. ÷ 1.)*	72%	74%
5. Combined valuation payroll	$1,051,563	$1,125,528
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	151%	123%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$426,094	$33,131	$30,633	$423,596	$33,571
December 31, 2015	$961,232	$69,554	$69,314	$960,992	$70,320
December 31, 2016	N/A	N/A	N/A	$202,329	$14,286
Total				**$1,586,917**	**$118,177**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$5,265,161
b. Normal cost at December 31, 2015 (excluding assumed expenses)	103,732
c. Benefit payments during 2016	(161,163)
d. Interest at 7.50% to December 31, 2016	392,733
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	5,600,463
f. Change in actuarial accrued liability due to assumption, method, and plan changes	163,086
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	5,763,549
2. Actuarial accrued liability at December 31, 2016	5,753,630
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	9,919
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	3,877,835
b. Contributions for 2016[1]	118,820
c. Benefit payments and expenses during 2016	(162,529)
d. Interest at 7.50% to December 31, 2016	289,199
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	4,123,324
5. Actuarial value of assets at December 31, 2016	4,166,713
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	43,389
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$53,308**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$1,387,326**
2. Expected increase	89,813
3. Liability (gain)/loss	(9,919)
4. Asset (gain)/loss	(43,389)
5. Change due to changes in assumptions, methods, and plan provisions	163,086
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$1,586,917**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	105,331	533,058	19.76%	98,416	521,113	18.89%
Tier 2 General Service	11,206	66,603	16.83%	10,359	64,718	16.01%
Total	**$116,537**	**$599,661**	**19.43%**	**$108,775**	**$585,831**	**18.57%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$1,586,917	$1,387,326
2. Next year's Tier 1/Tier 2 UAL payment	118,177	102,685
3. Combined valuation payroll	1,051,563	1,125,528
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	11.24%	9.12%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.43%	18.57%
b. Tier 1/Tier 2 UAL rate	11.24%	9.12%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	30.81%	27.84%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	20.76%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	20.76%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	4.15%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.15%
c. Funded percentage	72%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.15%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	16.61%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	24.91%
7. Advisory July 1, 2019 total pension rate, before adjustment	30.81%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(5.90%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	11.24%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	5.34%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	24.91%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	19.43%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.43%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	24.91%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.43%	18.57%
b. Tier 1/Tier 2 UAL rate	5.34%	2.04%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	24.91%	20.76%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	66,603	533,058	599,661
Tier 1/Tier 2 valuation payroll	66,603	533,058	599,661
OPSRP valuation payroll	34,456	417,446	451,902
Combined valuation payroll	**$101,059**	**$950,504**	**$1,051,563**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	1	2	0	1	1	2
Police & Fire	0	6	5	11	0	6	7	13
Total	0	7	6	13	0	7	8	15
Active Members with previous service segments with the employer								
General Service	7	2	N/A	9	7	2	N/A	9
Police & Fire	5	3	N/A	8	5	3	N/A	8
Total	12	5	N/A	17	12	5	N/A	17
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	6	0	0	6	7	0	0	7
Total	6	0	0	6	7	0	0	7
Retired Members and Beneficiaries								
General Service	4	1	0	5	4	1	0	5
Police & Fire	11	0	1	12	11	0	1	12
Total	15	1	1	17	15	1	1	17
Grand Total Number of Members	**33**	**13**	**7**	**53**	**34**	**13**	**9**	**56**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44			3							**3**
45-49				1	1					**2**
50-54										
55-59				1						**1**
60-64			1							**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**4**	**2**	**1**	**0**	**0**	**0**	**0**	**7**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	2	93
50-54		
55-59	2	1,209
60-64	2	622
65-69		
70-74		
75+		
Total	6	641

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	2	141
60-64	4	1,063
65-69	7	770
70-74	3	465
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	16	707

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Polk County/2037
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Polk County/2037

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Polk County/2037

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Polk County -- #2037

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Polk County to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Polk County.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Polk County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.21%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	6.82%	6.82%	6.82%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**24.59%**	**16.87%**	**21.60%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**25.08%**	**17.29%**	**22.02%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 70%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	19.19%	19.19%
Minimum 2019-2021 Rate	15.35%	11.51%
Maximum 2019-2021 Rate	23.03%	26.87%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$59,227,350	$75,481,554	$16,254,204	78%	$14,950,846	109%
12/31/2012	64,520,822	76,733,759	12,212,937	84%	14,922,763	82%
12/31/2013	71,511,022	79,488,788	7,977,766	90%	14,698,729	54%
12/31/2014	73,270,515	92,628,817	19,358,302	79%	13,757,575	141%
12/31/2015	69,808,717	95,739,939	25,931,222	73%	15,014,365	173%
12/31/2016	70,925,948	101,594,856	30,668,908	70%	17,362,845	177%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Polk County

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$30,668,908	$25,931,222
Allocated pooled OPSRP UAL	2,989,225	2,134,501
Side account	0	0
Net unfunded pension actuarial accrued liability	33,658,133	28,065,723
Combined valuation payroll	17,362,845	15,014,365
Net pension UAL as a percentage of payroll	194%	187%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($2,364)	$72,905

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$1,082,400	$1,077,495
Tier 1/Tier 2 valuation payroll	6,678,624	6,542,817
Tier 1/Tier 2 pension normal cost rate	16.21%	16.47%
Tier 1/ Tier 2 Actuarial accrued liability	$101,594,856	$95,739,939
Actuarial asset value	70,925,948	69,808,717
Tier 1/Tier 2 Unfunded actuarial accrued liability	30,668,908	25,931,222
Tier 1/ Tier 2 Funded status	70%	73%
Combined valuation payroll	$17,362,845	$15,014,365
Tier 1/Tier 2 UAL as a percentage of payroll	177%	173%
Tier 1/Tier 2 UAL rate	6.82%	2.72%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	99	97
Tier 1/Tier 2 dormant members	100	95
Tier 1/Tier 2 retirees and beneficiaries	421	408

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	17,362,845	15,014,365
3. Average Amortization factor	8.994	9.504
4. Total side account rate ***(-1. ÷ 2. ÷ 3.)*** [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$9,264,841	$9,641,535
2. Employer reserves	34,836,682	33,054,214
3. Benefits in force reserve	26,824,425	27,112,968
4. Total market value of assets *(1. + 2. + 3.)*	**$70,925,948**	**$69,808,717**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$69,808,717
2.	Regular employer contributions	1,241,781
3.	Benefit payments and expenses	(5,252,089)
4.	Adjustments [1]	221,181
5.	Interest credited	4,906,358
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)***	**$70,925,948**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Tier 1 Police & Fire	$102,542	$124,145
Tier 1 General Service	295,259	326,119
Tier 2 Police & Fire	341,414	313,622
Tier 2 General Service	343,185	313,609
Total	**$1,082,400**	**$1,077,495**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$1,056,355	$1,082,400	$26,045

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$3,242,565	$3,697,109
▪ Tier 1 General Service	12,312,788	13,315,928
▪ Tier 2 Police & Fire	7,003,114	6,054,887
▪ Tier 2 General Service	9,179,014	8,356,360
▪ **Total Active Members**	**$31,737,481**	**$31,424,284**
Dormant Members	6,507,481	5,773,567
Retired Members and Beneficiaries	63,349,894	58,542,088
Total Actuarial Accrued Liability	**$101,594,856**	**$95,739,939**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$99,464,845	$101,594,856	$2,130,011

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$101,594,856	$95,739,939
2. Actuarial value of assets	70,925,948	69,808,717
3. Unfunded accrued liability *(1. – 2.)*	30,668,908	25,931,222
4. Funded percentage *(2. ÷ 1.)*	70%	73%
5. Combined valuation payroll	$17,362,845	$15,014,365
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	177%	173%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$7,971,611	$619,828	$573,108	$7,924,891	$628,062
December 31, 2015	$17,959,611	$1,299,538	$1,295,053	$17,955,126	$1,313,854
December 31, 2016	N/A	N/A	N/A	$4,788,891	$338,127
Total				**$30,668,908**	**$2,280,043**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$95,739,939
b. Normal cost at December 31, 2015 (excluding assumed expenses)	1,027,567
c. Benefit payments during 2016	(5,207,923)
d. Interest at 7.50% to December 31, 2016	7,023,732
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	98,583,315
f. Change in actuarial accrued liability due to assumption, method, and plan changes	2,130,011
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	100,713,326
2. Actuarial accrued liability at December 31, 2016	101,594,856
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(881,530)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	69,808,717
b. Contributions for 2016[1]	1,241,781
c. Benefit payments and expenses during 2016	(5,252,089)
d. Interest at 7.50% to December 31, 2016	5,085,267
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	70,883,676
5. Actuarial value of assets at December 31, 2016	70,925,948
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	42,272
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($839,258)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$25,931,222**
2. Expected increase	1,768,417
3. Liability (gain)/loss	881,530
4. Asset (gain)/loss	(42,272)
5. Change due to changes in assumptions, methods, and plan provisions	2,130,011
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$30,668,908**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$102,542	$453,443	22.61%	$124,145	$581,238	21.36%
Tier 1 General Service	295,259	1,679,732	17.58%	326,119	1,764,928	18.48%
Tier 2 Police & Fire	341,414	1,717,053	19.88%	313,622	1,618,614	19.38%
Tier 2 General Service	343,185	2,828,396	12.13%	313,609	2,578,037	12.16%
Total	**$1,082,400**	**$6,678,624**	**16.21%**	**$1,077,495**	**$6,542,817**	**16.47%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$30,668,908	$25,931,222
2. Next year's Tier 1/Tier 2 UAL payment	2,280,043	1,919,366
3. Combined valuation payroll	17,362,845	15,014,365
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	13.13%	12.78%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.21%	16.47%
b. Tier 1/Tier 2 UAL rate	13.13%	12.78%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	29.48%	29.40%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	19.19%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	19.19%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.84%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.84%
c. Funded percentage	70%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.84%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	15.35%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	23.03%
7. Advisory July 1, 2019 total pension rate, before adjustment	29.48%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(6.45%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	13.13%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	6.68%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	23.03%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.21%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.21%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	23.03%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.21%	16.47%
b. Tier 1/Tier 2 UAL rate	6.68%	2.57%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	23.03%	19.19%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$1,679,732	$453,443	$2,133,175
Tier 2	2,828,396	1,717,053	4,545,449
Tier 1/Tier 2 valuation payroll	4,508,128	2,170,496	6,678,624
OPSRP valuation payroll	8,289,033	2,395,188	10,684,221
Combined valuation payroll	**$12,797,161**	**$4,565,684**	**$17,362,845**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	27	47	163	237	28	43	144	215
Police & Fire	5	20	39	64	6	20	23	49
Total	32	67	202	301	34	63	167	264
Active Members with previous service segments with the employer								
General Service	67	62	N/A	129	72	57	N/A	129
Police & Fire	11	23	N/A	34	10	18	N/A	28
Total	78	85	N/A	163	82	75	N/A	157
Dormant Members								
General Service	39	47	29	115	36	47	23	106
Police & Fire	6	8	3	17	5	7	3	15
Total	45	55	32	132	41	54	26	121
Retired Members and Beneficiaries								
General Service	330	27	4	361	314	34	3	351
Police & Fire	59	5	0	64	55	5	0	60
Total	389	32	4	425	369	39	3	411
Grand Total Number of Members	**544**	**239**	**238**	**1,021**	**526**	**231**	**196**	**953**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39			7	2						**9**
40-44		1	4	12						**17**
45-49			4	12	5	1				**22**
50-54	1	1	4	7	3	4				**20**
55-59			3	4	3	3	1			**14**
60-64		1	3	3	4	3		1		**15**
65-69			1		1					**2**
70-74										
75+										
Total	**1**	**3**	**26**	**40**	**16**	**11**	**1**	**1**	**0**	**99**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	9	476
40-44	16	428
45-49	15	658
50-54	8	668
55-59	24	739
60-64	12	505
65-69	11	490
70-74	4	311
75+	1	11
Total	100	568

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	1	124
45-49	4	357
50-54	14	1,328
55-59	18	606
60-64	66	983
65-69	110	1,117
70-74	93	1,096
75-79	50	1,033
80-84	30	830
85-89	23	685
90-94	10	1,008
95-99	2	369
100+		
Total	421	1,007

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Polk Soil & Water Conservation District/2613
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Polk Soil & Water Conservation District/2613

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Polk Soil & Water Conservation District -- #2613

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Polk Soil & Water Conservation District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Polk Soil & Water Conservation District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Polk Soil & Water Conservation District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.95%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	2.86%	2.86%	2.86%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**21.37%**	**12.91%**	**17.64%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**21.86%**	**13.33%**	**18.06%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 75%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.51%	16.51%
Minimum 2019-2021 Rate	13.21%	9.91%
Maximum 2019-2021 Rate	19.81%	23.11%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$287,707	$412,046	$124,339	70%	$188,085	66%
12/31/2012	322,307	440,320	118,013	73%	218,163	54%
12/31/2013	360,579	392,394	31,815	92%	198,395	16%
12/31/2014	365,179	451,078	85,899	81%	190,563	45%
12/31/2015	356,282	459,287	103,005	78%	195,141	53%
12/31/2016	361,269	483,607	122,338	75%	222,718	55%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Polk Soil & Water Conservation District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$122,338	$103,005
Allocated pooled OPSRP UAL	38,344	27,742
Side account	0	0
Net unfunded pension actuarial accrued liability	160,682	130,747
Combined valuation payroll	222,718	195,141
Net pension UAL as a percentage of payroll	72%	67%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($30)	$948

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$0	$0
Tier 1/Tier 2 valuation payroll	0	0
Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
Tier 1/ Tier 2 Actuarial accrued liability	$483,607	$459,287
Actuarial asset value	361,269	356,282
Tier 1/Tier 2 Unfunded actuarial accrued liability	122,338	103,005
Tier 1/ Tier 2 Funded status	75%	78%
Combined valuation payroll	$222,718	$195,141
Tier 1/Tier 2 UAL as a percentage of payroll	55%	53%
Tier 1/Tier 2 UAL rate	2.86%	(0.20%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	2	2
Tier 1/Tier 2 retirees and beneficiaries	1	1

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) **RHIA**	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	**Continuing**	**Total**
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	222,718	195,141
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$57,523	$54,575
2. Employer reserves	177,273	166,502
3. Benefits in force reserve	126,473	135,205
4. Total market value of assets ***(1. + 2. + 3.)***	**$361,269**	**$356,282**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$356,282
2.	Regular employer contributions	(765)
3.	Benefit payments and expenses	(24,763)
4.	Adjustments [1]	6,052
5.	Interest credited	24,463
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$361,269**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$0**	**$0**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	51,839	50,695
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	16,490	13,468
▪ **Total Active Members**	**$68,329**	**$64,163**
Dormant Members	116,593	103,191
Retired Members and Beneficiaries	298,685	291,933
Total Actuarial Accrued Liability	**$483,607**	**$459,287**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$469,145	$483,607	$14,462

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$483,607	$459,287
2. Actuarial value of assets	361,269	356,282
3. Unfunded accrued liability *(1. – 2.)*	122,338	103,005
4. Funded percentage *(2. ÷ 1.)*	75%	78%
5. Combined valuation payroll	$222,718	$195,141
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	55%	53%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$31,791	$2,472	$2,286	$31,605	$2,505
December 31, 2015	$71,214	$5,153	$5,135	$71,196	$5,210
December 31, 2016	N/A	N/A	N/A	$19,537	$1,379
Total				**$122,338**	**$9,094**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$459,287
b. Normal cost at December 31, 2015 (excluding assumed expenses)	0
c. Benefit payments during 2016	(24,555)
d. Interest at 7.50% to December 31, 2016	33,526
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	468,258
f. Change in actuarial accrued liability due to assumption, method, and plan changes	14,462
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	482,720
2. Actuarial accrued liability at December 31, 2016	483,607
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(887)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	356,282
b. Contributions for 2016[1]	(765)
c. Benefit payments and expenses during 2016	(24,763)
d. Interest at 7.50% to December 31, 2016	25,764
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	356,518
5. Actuarial value of assets at December 31, 2016	361,269
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	4,751
7. Total actuarial gain/(loss) *(3. + 6.)*	**$3,864**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$103,005**
2. Expected increase	8,735
3. Liability (gain)/loss	887
4. Asset (gain)/loss	(4,751)
5. Change due to changes in assumptions, methods, and plan provisions	14,462
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$122,338**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$0**	**$0**	**16.95%**	**$0**	**$0**	**16.71%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$122,338	$103,005
2. Next year's Tier 1/Tier 2 UAL payment	9,094	7,625
3. Combined valuation payroll	222,718	195,141
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	4.08%	3.91%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	4.08%	3.91%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	21.17%	20.77%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.51%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.51%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.30%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.30%
c. Funded percentage	75%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.30%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.21%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	19.81%
7. Advisory July 1, 2019 total pension rate, before adjustment	21.17%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(1.36%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	4.08%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	2.72%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	19.81%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.95%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.95%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	19.81%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	2.72%	(0.35%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	19.81%	16.51%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	0	0	0
OPSRP valuation payroll	222,718	0	222,718
Combined valuation payroll	**$222,718**	**$0**	**$222,718**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	6	6	0	0	6	6
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	6	6	0	0	6	6
Active Members with previous service segments with the employer								
General Service	1	2	N/A	3	1	2	N/A	3
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	2	N/A	3	1	2	N/A	3
Dormant Members								
General Service	0	2	2	4	0	2	3	5
Police & Fire	0	0	0	0	0	0	0	0
Total	0	2	2	4	0	2	3	5
Retired Members and Beneficiaries								
General Service	1	0	0	1	1	0	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	0	1	1	0	0	1
Grand Total Number of Members	**2**	**4**	**8**	**14**	**2**	**4**	**9**	**15**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	1	138
40-44		
45-49		
50-54	1	1,229
55-59		
60-64		
65-69		
70-74		
75+		
Total	2	684

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74	1	2,187
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	1	2,187

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Port of Astoria/2507
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System (“PERS” or “the System”) as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Port of Astoria/2507

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Port of Astoria/2507

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Port of Astoria -- #2507

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Port of Astoria to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Port of Astoria.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Port of Astoria

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	10.98%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	4.23%	4.23%	4.23%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**16.77%**	**14.28%**	**19.01%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**17.26%**	**14.70%**	**19.43%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 85%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	13.24%	13.24%
Minimum 2019-2021 Rate	10.24%	7.24%
Maximum 2019-2021 Rate	16.24%	19.24%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$4,672,295	$5,646,482	$974,187	83%	$1,358,257	72%
12/31/2012	5,195,703	5,444,429	248,726	95%	1,487,753	17%
12/31/2013	5,438,787	5,486,807	48,020	99%	1,294,017	4%
12/31/2014	5,452,817	6,228,155	775,338	88%	1,418,154	55%
12/31/2015	5,233,641	6,263,210	1,029,569	84%	1,503,469	68%
12/31/2016	5,129,723	6,026,456	896,733	85%	1,617,954	55%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Port of Astoria

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$896,733	$1,029,569
Allocated pooled OPSRP UAL	278,551	213,739
Side account	0	0
Net unfunded pension actuarial accrued liability	1,175,284	1,243,308
Combined valuation payroll	1,617,954	1,503,469
Net pension UAL as a percentage of payroll	73%	83%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($220)	$7,300

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$22,903	$19,598
Tier 1/Tier 2 valuation payroll	208,615	147,811
Tier 1/Tier 2 pension normal cost rate	10.98%	13.26%
Tier 1/ Tier 2 Actuarial accrued liability	$6,026,456	$6,263,210
Actuarial asset value	5,129,723	5,233,641
Tier 1/Tier 2 Unfunded actuarial accrued liability	896,733	1,029,569
Tier 1/ Tier 2 Funded status	85%	84%
Combined valuation payroll	$1,617,954	$1,503,469
Tier 1/Tier 2 UAL as a percentage of payroll	55%	68%
Tier 1/Tier 2 UAL rate	4.23%	(0.02%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	4	5
Tier 1/Tier 2 retirees and beneficiaries	31	32

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) **RHIA**	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,617,954	1,503,469
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$344,525	$326,017
2. Employer reserves	2,692,611	2,487,929
3. Benefits in force reserve	2,092,587	2,419,695
4. Total market value of assets ***(1. + 2. + 3.)***	**$5,129,723**	**$5,233,641**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$5,233,641
2. Regular employer contributions	27,063
3. Benefit payments and expenses	(409,718)
4. Adjustments [1]	(69,146)
5. Interest credited	347,883
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$5,129,723**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	22,903	19,598
Total	**$22,903**	**$19,598**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$22,289	$22,903	$614

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	474,260	501,993
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	377,385	306,902
▪ **Total Active Members**	**$851,645**	**$808,895**
Dormant Members	232,854	229,730
Retired Members and Beneficiaries	4,941,957	5,224,585
Total Actuarial Accrued Liability	**$6,026,456**	**$6,263,210**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$5,896,039	$6,026,456	$130,417

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$6,026,456	$6,263,210
2. Actuarial value of assets	5,129,723	5,233,641
3. Unfunded accrued liability *(1. – 2.)*	896,733	1,029,569
4. Funded percentage *(2. ÷ 1.)*	85%	84%
5. Combined valuation payroll	$1,617,954	$1,503,469
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	55%	68%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$47,982	$3,731	$3,450	$47,701	$3,780
December 31, 2015	$981,587	$71,027	$70,781	$981,341	$71,809
December 31, 2016	N/A	N/A	N/A	($132,309)	($9,342)
Total				**$896,733**	**$66,247**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$6,263,210
b. Normal cost at December 31, 2015 (excluding assumed expenses)	18,691
c. Benefit payments during 2016	(406,273)
d. Interest at 7.50% to December 31, 2016	455,206
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	6,330,834
f. Change in actuarial accrued liability due to assumption, method, and plan changes	130,417
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	6,461,251
2. Actuarial accrued liability at December 31, 2016	6,026,456
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	434,795
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	5,233,641
b. Contributions for 2016[1]	27,063
c. Benefit payments and expenses during 2016	(409,718)
d. Interest at 7.50% to December 31, 2016	378,174
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	5,229,160
5. Actuarial value of assets at December 31, 2016	5,129,723
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(99,437)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$335,358**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$1,029,569**
2. Expected increase	72,105
3. Liability (gain)/loss	(434,795)
4. Asset (gain)/loss	99,437
5. Change due to changes in assumptions, methods, and plan provisions	130,417
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$896,733**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	22,903	208,615	10.98%	19,598	147,811	13.26%
Total	**$22,903**	**$208,615**	**10.98%**	**$19,598**	**$147,811**	**13.26%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$896,733	$1,029,569
2. Next year's Tier 1/Tier 2 UAL payment	66,247	74,758
3. Combined valuation payroll	1,617,954	1,503,469
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	4.09%	4.97%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	10.98%	13.26%
b. Tier 1/Tier 2 UAL rate	4.09%	4.97%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	15.21%	18.38%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	13.24%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	13.24%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.65%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	85%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	10.24%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	16.24%
7. Advisory July 1, 2019 total pension rate, before adjustment	15.21%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	4.09%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	4.09%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	15.21%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	10.98%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	10.98%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	15.21%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	10.98%	13.26%
b. Tier 1/Tier 2 UAL rate	4.09%	(0.17%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	15.21%	13.24%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	208,615	0	208,615
Tier 1/Tier 2 valuation payroll	208,615	0	208,615
OPSRP valuation payroll	1,409,339	0	1,409,339
Combined valuation payroll	**$1,617,954**	**$0**	**$1,617,954**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	3	29	32	0	3	27	30
Police & Fire	0	0	0	0	0	0	0	0
Total	0	3	29	32	0	3	27	30
Active Members with previous service segments with the employer								
General Service	4	1	N/A	5	4	0	N/A	4
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	4	1	N/A	5	4	0	N/A	4
Dormant Members								
General Service	1	3	7	11	1	4	5	10
Police & Fire	0	0	0	0	0	0	0	0
Total	1	3	7	11	1	4	5	10
Retired Members and Beneficiaries								
General Service	25	4	2	31	25	5	0	30
Police & Fire	2	0	0	2	2	0	0	2
Total	27	4	2	33	27	5	0	32
Grand Total Number of Members	**32**	**11**	**38**	**81**	**32**	**12**	**32**	**76**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44				1						1
45-49										
50-54			1							1
55-59				1						1
60-64										
65-69										
70-74										
75+										
Total	0	0	1	2	0	0	0	0	0	3

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	1,039
50-54		
55-59	1	50
60-64	1	643
65-69	1	308
70-74		
75+		
Total	4	510

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	1	42
55-59		
60-64	5	1,708
65-69	9	1,013
70-74	8	449
75-79	3	2,274
80-84	2	635
85-89	1	2,714
90-94	1	1,616
95-99	1	905
100+		
Total	31	1,117

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Port of Cascade Locks/2633
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Port of Cascade Locks/2633

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Port of Cascade Locks -- #2633

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Port of Cascade Locks to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Port of Cascade Locks.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Port of Cascade Locks

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.99%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(2.24%)	(2.24%)	(2.24%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**13.31%**	**7.81%**	**12.54%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**13.80%**	**8.23%**	**12.96%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 88%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	8.75%	8.75%
Minimum 2019-2021 Rate	5.75%	2.75%
Maximum 2019-2021 Rate	11.75%	14.75%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$5,389,060	$5,535,473	$146,413	97%	$627,202	23%
12/31/2012	5,740,612	5,705,510	(35,102)	101%	427,714	(8%)
12/31/2013	6,273,515	5,803,343	(470,172)	108%	447,857	(105%)
12/31/2014	6,314,643	6,629,236	314,593	95%	387,075	81%
12/31/2015	6,322,162	7,087,889	765,727	89%	538,108	142%
12/31/2016	6,371,793	7,272,982	901,189	88%	502,227	179%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Port of Cascade Locks

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$901,189	$765,727
Allocated pooled OPSRP UAL	86,464	76,500
Side account	0	0
Net unfunded pension actuarial accrued liability	987,653	842,227
Combined valuation payroll	502,227	538,108
Net pension UAL as a percentage of payroll	197%	157%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($68)	$2,613

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$14,022	$18,280
Tier 1/Tier 2 valuation payroll	100,232	132,833
Tier 1/Tier 2 pension normal cost rate	13.99%	13.76%
Tier 1/ Tier 2 Actuarial accrued liability	$7,272,982	$7,087,889
Actuarial asset value	6,371,793	6,322,162
Tier 1/Tier 2 Unfunded actuarial accrued liability	901,189	765,727
Tier 1/ Tier 2 Funded status	88%	89%
Combined valuation payroll	$502,227	$538,108
Tier 1/Tier 2 UAL as a percentage of payroll	179%	142%
Tier 1/Tier 2 UAL rate	(2.24%)	(5.01%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	2	3
Tier 1/Tier 2 dormant members	13	13
Tier 1/Tier 2 retirees and beneficiaries	33	33

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	502,227	538,108
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$1,083,669	$1,041,346
2. Employer reserves	3,394,454	3,274,395
3. Benefits in force reserve	1,893,670	2,006,421
4. Total market value of assets ***(1. + 2. + 3.)***	**$6,371,793**	**$6,322,162**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$6,322,162
2.	Regular employer contributions	(16,686)
3.	Benefit payments and expenses	(370,771)
4.	Adjustments [1]	(51)
5.	Interest credited	437,139
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$6,371,793**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	14,022	18,280
Total	**$14,022**	**$18,280**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$13,535	$14,022	$487

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	366,682	367,044
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	308,003	386,213
▪ **Total Active Members**	**$674,685**	**$753,257**
Dormant Members	2,126,113	2,002,386
Retired Members and Beneficiaries	4,472,184	4,332,246
Total Actuarial Accrued Liability	**$7,272,982**	**$7,087,889**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$7,181,631	$7,272,982	$91,351

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$7,272,982	$7,087,889
2. Actuarial value of assets	6,371,793	6,322,162
3. Unfunded accrued liability *(1. – 2.)*	901,189	765,727
4. Funded percentage *(2. ÷ 1.)*	88%	89%
5. Combined valuation payroll	$502,227	$538,108
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	179%	142%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($469,809)	($36,530)	($33,776)	($467,055)	($37,015)
December 31, 2015	$1,235,536	$89,402	$89,093	$1,235,227	$90,387
December 31, 2016	N/A	N/A	N/A	$133,017	$9,392
Total				**$901,189**	**$62,764**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$7,087,889
b. Normal cost at December 31, 2015 (excluding assumed expenses)	17,435
c. Benefit payments during 2016	(367,653)
d. Interest at 7.50% to December 31, 2016	518,459
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	7,256,130
f. Change in actuarial accrued liability due to assumption, method, and plan changes	91,351
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	7,347,481
2. Actuarial accrued liability at December 31, 2016	7,272,982
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	74,499
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	6,322,162
b. Contributions for 2016[1]	(16,686)
c. Benefit payments and expenses during 2016	(370,771)
d. Interest at 7.50% to December 31, 2016	459,633
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	6,394,338
5. Actuarial value of assets at December 31, 2016	6,371,793
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(22,544)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$51,955**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$765,727**
2. Expected increase	96,066
3. Liability (gain)/loss	(74,499)
4. Asset (gain)/loss	22,544
5. Change due to changes in assumptions, methods, and plan provisions	91,351
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$901,189**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	14,022	100,232	13.99%	18,280	132,833	13.76%
Total	**$14,022**	**$100,232**	**13.99%**	**$18,280**	**$132,833**	**13.76%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$901,189	$765,727
2. Next year's Tier 1/Tier 2 UAL payment	62,764	52,872
3. Combined valuation payroll	502,227	538,108
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	12.50%	9.83%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.99%	13.76%
b. Tier 1/Tier 2 UAL rate	12.50%	9.83%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	26.63%	23.74%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	8.75%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	8.75%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.75%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	88%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	5.75%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	11.75%
7. Advisory July 1, 2019 total pension rate, before adjustment	26.63%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(14.88%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	12.50%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(2.38%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	11.75%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.99%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.99%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	11.75%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.99%	13.76%
b. Tier 1/Tier 2 UAL rate	(2.38%)	(5.16%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	11.75%	8.75%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	100,232	0	100,232
Tier 1/Tier 2 valuation payroll	100,232	0	100,232
OPSRP valuation payroll	401,995	0	401,995
Combined valuation payroll	**$502,227**	**$0**	**$502,227**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	2	12	14	0	3	12	15
Police & Fire	0	0	0	0	0	0	0	0
Total	0	2	12	14	0	3	12	15
Active Members with previous service segments with the employer								
General Service	2	1	N/A	3	2	1	N/A	3
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	2	1	N/A	3	2	1	N/A	3
Dormant Members								
General Service	9	4	2	15	9	4	2	15
Police & Fire	0	0	0	0	0	0	0	0
Total	9	4	2	15	9	4	2	15
Retired Members and Beneficiaries								
General Service	28	5	2	35	29	4	2	35
Police & Fire	0	0	0	0	0	0	0	0
Total	28	5	2	35	29	4	2	35
Grand Total Number of Members	**39**	**12**	**16**	**67**	**40**	**12**	**16**	**68**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59				1						**1**
60-64										
65-69			1							**1**
70-74										
75+										
Total	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**2**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	632
45-49		
50-54	6	2,049
55-59	1	1,449
60-64	1	2,095
65-69	1	634
70-74	3	99
75+		
Total	13	1,339

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	7	1,654
65-69	7	997
70-74	6	300
75-79	6	797
80-84	5	425
85-89	2	275
90-94		
95-99		
100+		
Total	33	843

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Port of Hood River/2788
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System (“PERS” or “the System”) as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

Milliman

November 2017
Port of Hood River/2788

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Port of Hood River/2788

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Port of Hood River -- #2788

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Port of Hood River to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Port of Hood River.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Port of Hood River

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.34%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	4.28%	4.28%	4.28%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**19.18%**	**14.33%**	**19.06%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**19.67%**	**14.75%**	**19.48%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 74%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	14.62%	14.62%
Minimum 2019-2021 Rate	11.62%	8.62%
Maximum 2019-2021 Rate	17.62%	20.62%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,776,221	$1,927,241	$151,020	92%	$898,223	17%
12/31/2012	2,009,040	2,223,288	214,248	90%	1,003,206	21%
12/31/2013	2,341,088	2,399,064	57,976	98%	1,035,612	6%
12/31/2014	2,370,756	2,932,042	561,286	81%	1,045,521	54%
12/31/2015	2,413,916	3,122,338	708,422	77%	1,165,124	61%
12/31/2016	2,537,268	3,426,722	889,454	74%	1,308,475	68%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Port of Hood River

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	$889,454	$708,422
Allocated pooled OPSRP UAL	225,270	165,639
Side account	0	0
Net unfunded pension actuarial accrued liability	1,114,724	874,061
Combined valuation payroll	1,308,475	1,165,124
Net pension UAL as a percentage of payroll	85%	75%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($178)	$5,657

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$91,328	$86,193
Tier 1/Tier 2 valuation payroll	684,462	669,818
Tier 1/Tier 2 pension normal cost rate	13.34%	12.87%
Tier 1/ Tier 2 Actuarial accrued liability	$3,426,722	$3,122,338
Actuarial asset value	2,537,268	2,413,916
Tier 1/Tier 2 Unfunded actuarial accrued liability	889,454	708,422
Tier 1/ Tier 2 Funded status	74%	77%
Combined valuation payroll	$1,308,475	$1,165,124
Tier 1/Tier 2 UAL as a percentage of payroll	68%	61%
Tier 1/Tier 2 UAL rate	4.28%	1.75%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	11	12
Tier 1/Tier 2 dormant members	6	6
Tier 1/Tier 2 retirees and beneficiaries	11	10

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,308,475	1,165,124
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$318,486	$365,567
2. Employer reserves	1,721,393	1,592,816
3. Benefits in force reserve	497,389	455,533
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,537,268**	**$2,413,916**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$2,413,916
2.	Regular employer contributions	86,271
3.	Benefit payments and expenses	(97,386)
4.	Adjustments [1]	(38,993)
5.	Interest credited	173,460
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,537,268**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	23,452	22,245
Tier 2 Police & Fire	0	0
Tier 2 General Service	67,876	63,948
Total	**$91,328**	**$86,193**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$89,214	$91,328	$2,114

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	815,457	874,644
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	1,125,892	974,275
▪ **Total Active Members**	**$1,941,349**	**$1,848,919**
Dormant Members	310,716	289,836
Retired Members and Beneficiaries	1,174,657	983,583
Total Actuarial Accrued Liability	**$3,426,722**	**$3,122,338**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$3,308,680	$3,426,722	$118,042

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$3,426,722	$3,122,338
2. Actuarial value of assets	2,537,268	2,413,916
3. Unfunded accrued liability *(1. – 2.)*	889,454	708,422
4. Funded percentage *(2. ÷ 1.)*	74%	77%
5. Combined valuation payroll	$1,308,475	$1,165,124
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	68%	61%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$57,932	$4,504	$4,165	$57,593	$4,564
December 31, 2015	$650,490	$47,069	$46,906	$650,327	$47,587
December 31, 2016	N/A	N/A	N/A	$181,534	$12,817
Total				**$889,454**	**$64,968**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$3,122,338
b. Normal cost at December 31, 2015 (excluding assumed expenses)	82,204
c. Benefit payments during 2016	(96,567)
d. Interest at 7.50% to December 31, 2016	233,637
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	3,341,612
f. Change in actuarial accrued liability due to assumption, method, and plan changes	118,042
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	3,459,654
2. Actuarial accrued liability at December 31, 2016	3,426,722
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	32,932
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	2,413,916
b. Contributions for 2016[1]	86,271
c. Benefit payments and expenses during 2016	(97,386)
d. Interest at 7.50% to December 31, 2016	180,627
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	2,583,427
5. Actuarial value of assets at December 31, 2016	2,537,268
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(46,160)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($13,228)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$708,422**
2. Expected increase	49,762
3. Liability (gain)/loss	(32,932)
4. Asset (gain)/loss	46,160
5. Change due to changes in assumptions, methods, and plan provisions	118,042
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$889,454**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	23,452	183,153	12.80%	22,245	179,798	12.37%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	67,876	501,309	13.54%	63,948	490,020	13.05%
Total	**$91,328**	**$684,462**	**13.34%**	**$86,193**	**$669,818**	**12.87%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$889,454	$708,422
2. Next year's Tier 1/Tier 2 UAL payment	64,968	51,573
3. Combined valuation payroll	1,308,475	1,165,124
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	4.97%	4.43%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.34%	12.87%
b. Tier 1/Tier 2 UAL rate	4.97%	4.43%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	18.45%	17.45%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	14.62%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	14.62%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.92%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	74%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	11.62%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	17.62%
7. Advisory July 1, 2019 total pension rate, before adjustment	18.45%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.83%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	4.97%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	4.14%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	17.62%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.34%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.34%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.62%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.34%	12.87%
b. Tier 1/Tier 2 UAL rate	4.14%	1.60%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	17.62%	14.62%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$183,153	$0	$183,153
Tier 2	501,309	0	501,309
Tier 1/Tier 2 valuation payroll	684,462	0	684,462
OPSRP valuation payroll	624,013	0	624,013
Combined valuation payroll	**$1,308,475**	**$0**	**$1,308,475**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	9	17	28	3	9	12	24
Police & Fire	0	0	0	0	0	0	0	0
Total	2	9	17	28	3	9	12	24
Active Members with previous service segments with the employer								
General Service	2	1	N/A	3	2	1	N/A	3
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	2	1	N/A	3	2	1	N/A	3
Dormant Members								
General Service	2	4	1	7	2	4	1	7
Police & Fire	0	0	0	0	0	0	0	0
Total	2	4	1	7	2	4	1	7
Retired Members and Beneficiaries								
General Service	9	2	0	11	8	2	0	10
Police & Fire	0	0	0	0	0	0	0	0
Total	9	2	0	11	8	2	0	10
Grand Total Number of Members	**15**	**16**	**18**	**49**	**15**	**16**	**13**	**44**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44				1						1
45-49				2						2
50-54				1						1
55-59					1					1
60-64		1	2	2						5
65-69			1							1
70-74										
75+										
Total	0	1	3	6	1	0	0	0	0	11

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59	2	773
60-64	2	250
65-69	1	54
70-74		
75+	1	252
Total	6	392

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	4	1,064
65-69	1	233
70-74	1	304
75-79	3	728
80-84	2	407
85-89		
90-94		
95-99		
100+		
Total	11	708

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Port of St Helens/2570
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Port of St Helens/2570

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Port of St Helens/2570

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Port of St Helens -- #2570

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Port of St Helens to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Port of St Helens.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Port of St Helens

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	11.38%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	0.10%	0.10%	0.10%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**13.04%**	**10.15%**	**14.88%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**13.53%**	**10.57%**	**15.30%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 99%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	10.99%	10.99%
Minimum 2019-2021 Rate	7.99%	4.99%
Maximum 2019-2021 Rate	13.99%	16.99%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,659,759	$1,763,906	$104,147	94%	$703,056	15%
12/31/2012	1,808,628	1,712,608	(96,020)	106%	737,966	(13%)
12/31/2013	1,971,697	1,758,059	(213,638)	112%	740,374	(29%)
12/31/2014	2,023,680	2,101,780	78,100	96%	781,936	10%
12/31/2015	2,008,811	2,005,253	(3,558)	100%	869,839	0%
12/31/2016	2,051,472	2,065,051	13,579	99%	838,308	2%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Port of St Helens

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$13,579	($3,558)
Allocated pooled OPSRP UAL	144,325	123,660
Side account	0	0
Net unfunded pension actuarial accrued liability	157,904	120,102
Combined valuation payroll	838,308	869,839
Net pension UAL as a percentage of payroll	19%	14%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($114)	$4,224

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$12,727	$14,564
Tier 1/Tier 2 valuation payroll	111,871	132,351
Tier 1/Tier 2 pension normal cost rate	11.38%	11.00%
Tier 1/ Tier 2 Actuarial accrued liability	$2,065,051	$2,005,253
Actuarial asset value	2,051,472	2,008,811
Tier 1/Tier 2 Unfunded actuarial accrued liability	13,579	(3,558)
Tier 1/ Tier 2 Funded status	99%	100%
Combined valuation payroll	$838,308	$869,839
Tier 1/Tier 2 UAL as a percentage of payroll	2%	0%
Tier 1/Tier 2 UAL rate	0.10%	(0.01%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	4	3
Tier 1/Tier 2 retirees and beneficiaries	4	5

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	838,308	869,839
3. Average Amortization factor	8.994	9.504
4. Total side account rate ***(-1. ÷ 2. ÷ 3.)*** [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$188,579	$178,527
2. Employer reserves	1,325,480	1,235,666
3. Benefits in force reserve	537,413	594,619
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,051,472**	**$2,008,811**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$2,008,811
2.	Regular employer contributions	2,499
3.	Benefit payments and expenses	(105,223)
4.	Adjustments [1]	6,769
5.	Interest credited	138,614
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,051,472**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	12,727	14,564
Total	**$12,727**	**$14,564**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$12,315	$12,727	$412

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	132,325	126,638
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	362,148	328,685
▪ **Total Active Members**	**$494,473**	**$455,323**
Dormant Members	301,397	266,034
Retired Members and Beneficiaries	1,269,181	1,283,896
Total Actuarial Accrued Liability	**$2,065,051**	**$2,005,253**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,008,471	$2,065,051	$56,580

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$2,065,051	$2,005,253
2. Actuarial value of assets	2,051,472	2,008,811
3. Unfunded accrued liability *(1. – 2.)*	13,579	(3,558)
4. Funded percentage *(2. ÷ 1.)*	99%	100%
5. Combined valuation payroll	$838,308	$869,839
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	2%	0%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($213,473)	($16,598)	($15,347)	($212,222)	($16,819)
December 31, 2015	$209,915	$15,189	$15,137	$209,863	$15,357
December 31, 2016	N/A	N/A	N/A	$15,938	$1,125
Total				**$13,579**	**($337)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$2,005,253
b. Normal cost at December 31, 2015 (excluding assumed expenses)	13,995
c. Benefit payments during 2016	(104,338)
d. Interest at 7.50% to December 31, 2016	147,006
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,061,916
f. Change in actuarial accrued liability due to assumption, method, and plan changes	56,580
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	2,118,496
2. Actuarial accrued liability at December 31, 2016	2,065,051
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	53,445
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	2,008,811
b. Contributions for 2016[1]	2,499
c. Benefit payments and expenses during 2016	(105,223)
d. Interest at 7.50% to December 31, 2016	146,809
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	2,052,897
5. Actuarial value of assets at December 31, 2016	2,051,472
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(1,425)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$52,020**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($3,558)**
2. Expected increase	12,577
3. Liability (gain)/loss	(53,445)
4. Asset (gain)/loss	1,425
5. Change due to changes in assumptions, methods, and plan provisions	56,580
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$13,579**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	12,727	111,871	11.38%	14,564	132,351	11.00%
Total	**$12,727**	**$111,871**	**11.38%**	**$14,564**	**$132,351**	**11.00%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$13,579	($3,558)
2. Next year's Tier 1/Tier 2 UAL payment	(337)	(1,409)
3. Combined valuation payroll	838,308	869,839
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(0.04%)	(0.16%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.38%	11.00%
b. Tier 1/Tier 2 UAL rate	(0.04%)	(0.16%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	11.48%	10.99%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	10.99%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	10.99%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.20%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	99%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	7.99%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	13.99%
7. Advisory July 1, 2019 total pension rate, before adjustment	11.48%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(0.04%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(0.04%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	11.48%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.38%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.38%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	11.48%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.38%	11.00%
b. Tier 1/Tier 2 UAL rate	(0.04%)	(0.16%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	11.48%	10.99%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	111,871	0	111,871
Tier 1/Tier 2 valuation payroll	111,871	0	111,871
OPSRP valuation payroll	726,437	0	726,437
Combined valuation payroll	**$838,308**	**$0**	**$838,308**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	11	12	0	1	12	13
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	11	12	0	1	12	13
Active Members with previous service segments with the employer								
General Service	1	1	N/A	2	1	2	N/A	3
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	1	N/A	2	1	2	N/A	3
Dormant Members								
General Service	0	4	0	4	0	3	0	3
Police & Fire	0	0	0	0	0	0	0	0
Total	0	4	0	4	0	3	0	3
Retired Members and Beneficiaries								
General Service	3	1	1	5	4	1	1	6
Police & Fire	0	0	0	0	0	0	0	0
Total	3	1	1	5	4	1	1	6
Grand Total Number of Members	**4**	**7**	**12**	**23**	**5**	**7**	**13**	**25**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49			1							**1**
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	1	113
55-59	2	730
60-64	1	525
65-69		
70-74		
75+		
Total	4	525

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69	1	5,900
70-74		
75-79	1	1,792
80-84	2	476
85-89		
90-94		
95-99		
100+		
Total	4	2,161

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Port of Umatilla/2581
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Port of Umatilla/2581

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Port of Umatilla/2581

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Port of Umatilla -- #2581

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Port of Umatilla to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Port of Umatilla.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Port of Umatilla

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.04%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	3.38%	3.38%	3.38%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**25.98%**	**13.43%**	**18.16%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**26.47%**	**13.85%**	**18.58%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 75%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	20.35%	20.35%
Minimum 2019-2021 Rate	16.28%	12.21%
Maximum 2019-2021 Rate	24.42%	28.49%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,302,983	$1,727,626	$424,643	75%	$209,068	203%
12/31/2012	1,466,216	1,609,488	143,272	91%	155,036	92%
12/31/2013	1,478,945	1,673,028	194,083	88%	152,543	127%
12/31/2014	1,514,304	1,936,061	421,757	78%	147,945	285%
12/31/2015	1,486,213	1,953,811	467,598	76%	149,789	312%
12/31/2016	1,539,275	2,066,158	526,883	75%	151,436	348%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Port of Umatilla

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$526,883	$467,598
Allocated pooled OPSRP UAL	26,072	21,295
Side account	0	0
Net unfunded pension actuarial accrued liability	552,955	488,893
Combined valuation payroll	151,436	149,789
Net pension UAL as a percentage of payroll	365%	326%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($21)	$727

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$31,868	$29,882
Tier 1/Tier 2 valuation payroll	151,436	149,789
Tier 1/Tier 2 pension normal cost rate	21.04%	19.95%
Tier 1/ Tier 2 Actuarial accrued liability	$2,066,158	$1,953,811
Actuarial asset value	1,539,275	1,486,213
Tier 1/Tier 2 Unfunded actuarial accrued liability	526,883	467,598
Tier 1/ Tier 2 Funded status	75%	76%
Combined valuation payroll	$151,436	$149,789
Tier 1/Tier 2 UAL as a percentage of payroll	348%	312%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	3.38%	0.40%
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	3	3

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	151,436	149,789
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$190,459	$180,467
2. Employer reserves	777,322	700,854
3. Benefits in force reserve	571,494	604,892
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,539,275**	**$1,486,213**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$1,486,213
2. Regular employer contributions	24,728
3. Benefit payments and expenses	(111,896)
4. Adjustments [1]	35,924
5. Interest credited	104,306
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,539,275**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	31,868	29,882
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$31,868**	**$29,882**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$31,191	$31,868	$677

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	716,488	647,732
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$716,488**	**$647,732**
Dormant Members	0	0
Retired Members and Beneficiaries	1,349,670	1,306,079
Total Actuarial Accrued Liability	**$2,066,158**	**$1,953,811**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,001,499	$2,066,158	$64,659

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$2,066,158	$1,953,811
2. Actuarial value of assets	1,539,275	1,486,213
3. Unfunded accrued liability *(1. – 2.)*	526,883	467,598
4. Funded percentage *(2. ÷ 1.)*	75%	76%
5. Combined valuation payroll	$151,436	$149,789
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	348%	312%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$193,933	$15,079	$13,943	$192,797	$15,280
December 31, 2015	$273,665	$19,802	$19,734	$273,597	$20,020
December 31, 2016	N/A	N/A	N/A	$60,489	$4,271
Total				**$526,883**	**$39,571**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,953,811
b. Normal cost at December 31, 2015 (excluding assumed expenses)	28,499
c. Benefit payments during 2016	(110,955)
d. Interest at 7.50% to December 31, 2016	143,444
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,014,799
f. Change in actuarial accrued liability due to assumption, method, and plan changes	64,659
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	2,079,458
2. Actuarial accrued liability at December 31, 2016	2,066,158
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	13,300
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,486,213
b. Contributions for 2016[1]	24,728
c. Benefit payments and expenses during 2016	(111,896)
d. Interest at 7.50% to December 31, 2016	108,197
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,507,243
5. Actuarial value of assets at December 31, 2016	1,539,275
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	32,033
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$45,333**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$467,598**
2. Expected increase	39,959
3. Liability (gain)/loss	(13,300)
4. Asset (gain)/loss	(32,033)
5. Change due to changes in assumptions, methods, and plan provisions	64,659
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$526,883**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	31,868	151,436	21.04%	29,882	149,789	19.95%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$31,868**	**$151,436**	**21.04%**	**$29,882**	**$149,789**	**19.95%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$526,883	$467,598
2. Next year's Tier 1/Tier 2 UAL payment	39,571	34,881
3. Combined valuation payroll	151,436	149,789
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	26.13%	23.29%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.04%	19.95%
b. Tier 1/Tier 2 UAL rate	26.13%	23.29%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	47.31%	43.39%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	20.35%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	20.35%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	4.07%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.07%
c. Funded percentage	75%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.07%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	16.28%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	24.42%
7. Advisory July 1, 2019 total pension rate, before adjustment	47.31%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(22.89%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	26.13%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.24%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	24.42%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	21.04%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.04%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	24.42%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.04%	19.95%
b. Tier 1/Tier 2 UAL rate	3.24%	0.25%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	24.42%	20.35%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$151,436	$0	$151,436
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	151,436	0	151,436
OPSRP valuation payroll	0	0	0
Combined valuation payroll	**$151,436**	**$0**	**$151,436**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	0	1	1	0	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	0	1	1	0	0	1
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	3	0	0	3	3	0	0	3
Police & Fire	0	0	0	0	0	0	0	0
Total	3	0	0	3	3	0	0	3
Grand Total Number of Members	**4**	**0**	**0**	**4**	**4**	**0**	**0**	**4**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
					Years of Service					
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69					1					**1**
70-74										
75+										
Total	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	3,622
65-69	1	2,498
70-74	1	1,943
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	3	2,688

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Redmond Area Park & Recreation District/2689
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Redmond Area Park & Recreation District/2689

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Redmond Area Park & Recreation District -- #2689

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Redmond Area Park & Recreation District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Redmond Area Park & Recreation District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Redmond Area Park & Recreation District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.88%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	0.96%	0.96%	0.96%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**16.40%**	**11.01%**	**15.74%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**16.89%**	**11.43%**	**16.16%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 94%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.96%	11.96%
Minimum 2019-2021 Rate	8.96%	5.96%
Maximum 2019-2021 Rate	14.96%	17.96%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,131,545	$1,064,956	($66,589)	106%	$590,808	(11%)
12/31/2012	1,271,322	1,134,298	(137,024)	112%	766,663	(18%)
12/31/2013	1,428,866	1,179,561	(249,305)	121%	719,810	(35%)
12/31/2014	1,488,341	1,421,829	(66,512)	105%	739,768	(9%)
12/31/2015	1,509,179	1,555,618	46,439	97%	740,008	6%
12/31/2016	1,587,537	1,695,818	108,281	94%	767,228	14%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Redmond Area Park & Recreation District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$108,281	$46,439
Allocated pooled OPSRP UAL	132,088	105,202
Side account	0	0
Net unfunded pension actuarial accrued liability	240,369	151,641
Combined valuation payroll	767,228	740,008
Net pension UAL as a percentage of payroll	31%	20%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($104)	$3,593

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$36,980	$34,583
Tier 1/Tier 2 valuation payroll	266,439	256,273
Tier 1/Tier 2 pension normal cost rate	13.88%	13.49%
Tier 1/ Tier 2 Actuarial accrued liability	$1,695,818	$1,555,618
Actuarial asset value	1,587,537	1,509,179
Tier 1/Tier 2 Unfunded actuarial accrued liability	108,281	46,439
Tier 1/ Tier 2 Funded status	94%	97%
Combined valuation payroll	$767,228	$740,008
Tier 1/Tier 2 UAL as a percentage of payroll	14%	6%
Tier 1/Tier 2 UAL rate	0.96%	(1.53%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	6	6
Tier 1/Tier 2 dormant members	7	6
Tier 1/Tier 2 retirees and beneficiaries	9	9

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	767,228	740,008
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$361,015	$340,707
2. Employer reserves	1,049,994	972,227
3. Benefits in force reserve	176,528	196,244
4. Total market value of assets *(1. + 2. + 3.)*	**$1,587,537**	**$1,509,179**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$1,509,179
2.	Regular employer contributions	8,699
3.	Benefit payments and expenses	(34,563)
4.	Adjustments [1]	(2,825)
5.	Interest credited	107,047
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,587,537**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	17,492	16,464
Tier 2 Police & Fire	0	0
Tier 2 General Service	19,488	18,119
Total	**$36,980**	**$34,583**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$36,217	$36,980	$763

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	677,984	622,180
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	423,326	365,027
▪ **Total Active Members**	**$1,101,310**	**$987,207**
Dormant Members	177,611	144,681
Retired Members and Beneficiaries	416,897	423,730
Total Actuarial Accrued Liability	**$1,695,818**	**$1,555,618**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,665,381	$1,695,818	$30,437

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,695,818	$1,555,618
2. Actuarial value of assets	1,587,537	1,509,179
3. Unfunded accrued liability *(1. – 2.)*	108,281	46,439
4. Funded percentage *(2. ÷ 1.)*	94%	97%
5. Combined valuation payroll	$767,228	$740,008
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	14%	6%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($249,113)	($19,370)	($17,910)	($247,653)	($19,627)
December 31, 2015	$295,552	$21,386	$21,312	$295,478	$21,621
December 31, 2016	N/A	N/A	N/A	$60,456	$4,269
Total				**$108,281**	**$6,263**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,555,618
b. Normal cost at December 31, 2015 (excluding assumed expenses)	32,982
c. Benefit payments during 2016	(34,273)
d. Interest at 7.50% to December 31, 2016	116,623
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,670,950
f. Change in actuarial accrued liability due to assumption, method, and plan changes	30,437
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,701,387
2. Actuarial accrued liability at December 31, 2016	1,695,818
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	5,569
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,509,179
b. Contributions for 2016[1]	8,699
c. Benefit payments and expenses during 2016	(34,563)
d. Interest at 7.50% to December 31, 2016	112,218
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,595,533
5. Actuarial value of assets at December 31, 2016	1,587,537
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(7,996)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($2,427)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$46,439**
2. Expected increase	28,978
3. Liability (gain)/loss	(5,569)
4. Asset (gain)/loss	7,996
5. Change due to changes in assumptions, methods, and plan provisions	30,437
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$108,281**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	17,492	108,843	16.07%	16,464	104,905	15.69%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	19,488	157,596	12.37%	18,119	151,368	11.97%
Total	**$36,980**	**$266,439**	**13.88%**	**$34,583**	**$256,273**	**13.49%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$108,281	$46,439
2. Next year's Tier 1/Tier 2 UAL payment	6,263	2,016
3. Combined valuation payroll	767,228	740,008
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.82%	0.27%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.88%	13.49%
b. Tier 1/Tier 2 UAL rate	0.82%	0.27%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	14.84%	13.91%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	11.96%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.96%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.39%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	94%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	8.96%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	14.96%
7. Advisory July 1, 2019 total pension rate, before adjustment	14.84%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	0.82%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.82%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	14.84%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.88%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.88%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	14.84%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.88%	13.49%
b. Tier 1/Tier 2 UAL rate	0.82%	(1.68%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	14.84%	11.96%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$108,843	$0	$108,843
Tier 2	157,596	0	157,596
Tier 1/Tier 2 valuation payroll	266,439	0	266,439
OPSRP valuation payroll	500,789	0	500,789
Combined valuation payroll	**$767,228**	**$0**	**$767,228**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	4	29	35	2	4	28	34
Police & Fire	0	0	0	0	0	0	0	0
Total	2	4	29	35	2	4	28	34
Active Members with previous service segments with the employer								
General Service	6	1	N/A	7	7	1	N/A	8
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	6	1	N/A	7	7	1	N/A	8
Dormant Members								
General Service	3	4	4	11	2	4	1	7
Police & Fire	0	0	0	0	0	0	0	0
Total	3	4	4	11	2	4	1	7
Retired Members and Beneficiaries								
General Service	8	1	0	9	8	1	0	9
Police & Fire	0	0	0	0	0	0	0	0
Total	8	1	0	9	8	1	0	9
Grand Total Number of Members	**19**	**10**	**33**	**62**	**19**	**10**	**29**	**58**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44						1				**1**
45-49				1						**1**
50-54			1							**1**
55-59				1						**1**
60-64				1						**1**
65-69					1					**1**
70-74										
75+										
Total	**0**	**0**	**1**	**3**	**1**	**1**	**0**	**0**	**0**	**6**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	3	83
45-49	1	851
50-54		
55-59	3	185
60-64		
65-69		
70-74		
75+		
Total	7	236

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	85
60-64		
65-69	4	463
70-74	2	297
75-79		
80-84		
85-89	1	348
90-94	1	69
95-99		
100+		
Total	9	328

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Rockwood Water PUD/2672
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Rockwood Water PUD/2672

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Rockwood Water PUD -- #2672

November 2017

Secondary Employers

2554 Hazelwood Water District

CONTENTS

Executive Summary

Milliman has prepared this report for Rockwood Water PUD to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Rockwood Water PUD.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Rockwood Water PUD

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.91%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	7.58%	7.58%	7.58%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**23.05%**	**17.63%**	**22.36%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**23.54%**	**18.05%**	**22.78%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 69%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	17.62%	17.62%
Minimum 2019-2021 Rate	14.10%	10.58%
Maximum 2019-2021 Rate	21.14%	24.66%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$6,767,732	$8,570,288	$1,802,556	79%	$1,285,852	140%
12/31/2012	7,031,202	8,782,146	1,750,944	80%	1,153,789	152%
12/31/2013	7,741,377	8,677,555	936,178	89%	1,240,344	75%
12/31/2014	7,886,747	9,725,263	1,838,516	81%	1,207,711	152%
12/31/2015	7,411,554	9,839,789	2,428,235	75%	1,306,692	186%
12/31/2016	7,325,991	10,577,170	3,251,179	69%	1,423,497	228%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Rockwood Water PUD

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$3,251,179	$2,428,235
Allocated pooled OPSRP UAL	245,072	185,764
Side account	0	0
Net unfunded pension actuarial accrued liability	3,496,251	2,613,999
Combined valuation payroll	1,423,497	1,306,692
Net pension UAL as a percentage of payroll	246%	200%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($194)	$6,345

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$81,347	$77,316
Tier 1/Tier 2 valuation payroll	584,765	558,543
Tier 1/Tier 2 pension normal cost rate	13.91%	13.84%
Tier 1/ Tier 2 Actuarial accrued liability	$10,577,170	$9,839,789
Actuarial asset value	7,325,991	7,411,554
Tier 1/Tier 2 Unfunded actuarial accrued liability	3,251,179	2,428,235
Tier 1/ Tier 2 Funded status	69%	75%
Combined valuation payroll	$1,423,497	$1,306,692
Tier 1/Tier 2 UAL as a percentage of payroll	228%	186%
Tier 1/Tier 2 UAL rate	7.58%	3.78%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	7	7
Tier 1/Tier 2 dormant members	7	8
Tier 1/Tier 2 retirees and beneficiaries	25	25

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,423,497	1,306,692
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$760,866	$1,039,600
2. Employer reserves	3,287,974	3,223,630
3. Benefits in force reserve	3,277,152	3,148,324
4. Total market value of assets *(1. + 2. + 3.)*	**$7,325,991**	**$7,411,554**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$7,411,554
2.	Regular employer contributions	100,574
3.	Benefit payments and expenses	(641,650)
4.	Adjustments [1]	(47,992)
5.	Interest credited	503,505
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$7,325,991**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	41,648	39,740
Tier 2 Police & Fire	0	0
Tier 2 General Service	39,699	37,576
Total	**$81,347**	**$77,316**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$80,676	$81,347	$671

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	567,303	971,379
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	987,801	843,319
▪ **Total Active Members**	**$1,555,104**	**$1,814,698**
Dormant Members	1,282,582	1,227,257
Retired Members and Beneficiaries	7,739,484	6,797,834
Total Actuarial Accrued Liability	**$10,577,170**	**$9,839,789**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$10,325,559	$10,577,170	$251,611

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$10,577,170	$9,839,789
2. Actuarial value of assets	7,325,991	7,411,554
3. Unfunded accrued liability *(1. – 2.)*	3,251,179	2,428,235
4. Funded percentage *(2. ÷ 1.)*	69%	75%
5. Combined valuation payroll	$1,423,497	$1,306,692
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	228%	186%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$935,457	$72,736	$67,253	$929,974	$73,702
December 31, 2015	$1,492,778	$108,016	$107,643	$1,492,405	$109,206
December 31, 2016	N/A	N/A	N/A	$828,800	$58,519
Total				**$3,251,179**	**$241,427**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$9,839,789
b. Normal cost at December 31, 2015 (excluding assumed expenses)	73,739
c. Benefit payments during 2016	(636,254)
d. Interest at 7.50% to December 31, 2016	716,890
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	9,994,164
f. Change in actuarial accrued liability due to assumption, method, and plan changes	251,611
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	10,245,775
2. Actuarial accrued liability at December 31, 2016	10,577,170
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(331,395)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	7,411,554
b. Contributions for 2016[1]	100,574
c. Benefit payments and expenses during 2016	(641,650)
d. Interest at 7.50% to December 31, 2016	535,576
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	7,406,054
5. Actuarial value of assets at December 31, 2016	7,325,991
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(80,063)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($411,458)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$2,428,235**
2. Expected increase	159,875
3. Liability (gain)/loss	331,395
4. Asset (gain)/loss	80,063
5. Change due to changes in assumptions, methods, and plan provisions	251,611
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$3,251,179**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	41,648	208,507	19.97%	39,740	187,875	21.15%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	39,699	376,258	10.55%	37,576	370,668	10.14%
Total	**$81,347**	**$584,765**	**13.91%**	**$77,316**	**$558,543**	**13.84%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$3,251,179	$2,428,235
2. Next year's Tier 1/Tier 2 UAL payment	241,427	180,752
3. Combined valuation payroll	1,423,497	1,306,692
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	16.96%	13.83%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.91%	13.84%
b. Tier 1/Tier 2 UAL rate	16.96%	13.83%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	31.01%	27.82%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	17.62%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	17.62%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.52%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.52%
c. Funded percentage	69%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.87%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.75%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	21.49%
7. Advisory July 1, 2019 total pension rate, before adjustment	31.01%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(9.52%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	16.96%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	7.44%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	21.49%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.91%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.91%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	21.49%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.91%	13.84%
b. Tier 1/Tier 2 UAL rate	7.44%	3.63%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	21.49%	17.62%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$208,507	$0	$208,507
Tier 2	376,258	0	376,258
Tier 1/Tier 2 valuation payroll	584,765	0	584,765
OPSRP valuation payroll	838,732	0	838,732
Combined valuation payroll	**$1,423,497**	**$0**	**$1,423,497**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	3	4	11	18	3	4	12	19
Police & Fire	0	0	0	0	0	0	0	0
Total	3	4	11	18	3	4	12	19
Active Members with previous service segments with the employer								
General Service	1	1	N/A	2	2	1	N/A	3
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	1	N/A	2	2	1	N/A	3
Dormant Members								
General Service	6	1	1	8	6	2	1	9
Police & Fire	0	0	0	0	0	0	0	0
Total	6	1	1	8	6	2	1	9
Retired Members and Beneficiaries								
General Service	23	2	0	25	23	2	0	25
Police & Fire	0	0	0	0	0	0	0	0
Total	23	2	0	25	23	2	0	25
Grand Total Number of Members	**33**	**8**	**12**	**53**	**34**	**9**	**13**	**56**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
	Years of Service									
<20										
20-24										
25-29										
30-34										
35-39			1							1
40-44			1		1					2
45-49				1						1
50-54				1						1
55-59					1	1				2
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**2**	**2**	**2**	**1**	**0**	**0**	**0**	**7**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	3	1,737
55-59	1	6
60-64	2	2,190
65-69		
70-74	1	0
75+		
Total	7	1,371

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	4	2,233
60-64	4	3,041
65-69	7	2,325
70-74	4	577
75-79	1	210
80-84	3	1,437
85-89	1	655
90-94	1	2,145
95-99		
100+		
Total	25	1,880

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Salem Housing Authority/2747
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System (“PERS” or “the System”) as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Salem Housing Authority/2747

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Salem Housing Authority -- #2747

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Salem Housing Authority to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Salem Housing Authority.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Salem Housing Authority

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.90%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	8.42%	8.42%	8.42%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**23.88%**	**18.47%**	**23.20%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**24.37%**	**18.89%**	**23.62%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 71%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	18.60%	18.60%
Minimum 2019-2021 Rate	14.88%	11.16%
Maximum 2019-2021 Rate	22.32%	26.04%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$9,559,472	$12,177,434	$2,617,962	79%	$2,434,177	108%
12/31/2012	10,563,890	12,164,784	1,600,894	87%	2,346,011	68%
12/31/2013	11,707,116	12,604,785	897,669	93%	2,063,886	43%
12/31/2014	12,030,592	14,947,652	2,917,060	80%	2,160,512	135%
12/31/2015	11,551,677	15,470,113	3,918,436	75%	2,075,885	189%
12/31/2016	11,675,058	16,483,425	4,808,367	71%	2,095,494	229%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Salem Housing Authority

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	$4,808,367	$3,918,436
Allocated pooled OPSRP UAL	360,765	295,116
Side account	0	0
Net unfunded pension actuarial accrued liability	5,169,132	4,213,552
Combined valuation payroll	2,095,494	2,075,885
Net pension UAL as a percentage of payroll	247%	203%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($285)	$10,080

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$139,486	$166,213
Tier 1/Tier 2 valuation payroll	1,003,612	1,169,488
Tier 1/Tier 2 pension normal cost rate	13.90%	14.21%
Tier 1/ Tier 2 Actuarial accrued liability	$16,483,425	$15,470,113
Actuarial asset value	11,675,058	11,551,677
Tier 1/Tier 2 Unfunded actuarial accrued liability	4,808,367	3,918,436
Tier 1/ Tier 2 Funded status	71%	75%
Combined valuation payroll	$2,095,494	$2,075,885
Tier 1/Tier 2 UAL as a percentage of payroll	229%	189%
Tier 1/Tier 2 UAL rate	8.42%	4.39%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	17	19
Tier 1/Tier 2 dormant members	14	13
Tier 1/Tier 2 retirees and beneficiaries	52	48

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) RHIA	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	2,095,494	2,075,885
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$1,241,513	$1,270,961
2. Employer reserves	5,571,102	5,361,711
3. Benefits in force reserve	4,862,443	4,919,005
4. Total market value of assets ***(1. + 2. + 3.)***	**$11,675,058**	**$11,551,677**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$11,551,677
2.	Regular employer contributions	208,018
3.	Benefit payments and expenses	(952,042)
4.	Adjustments [1]	67,504
5.	Interest credited	799,901
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$11,675,058**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	30,893	61,626
Tier 2 Police & Fire	0	0
Tier 2 General Service	108,593	104,587
Total	**$139,486**	**$166,213**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$136,322	$139,486	$3,164

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	865,556	1,847,805
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	2,071,675	1,986,017
▪ **Total Active Members**	**$2,937,231**	**$3,833,822**
Dormant Members	2,062,808	1,015,218
Retired Members and Beneficiaries	11,483,386	10,621,073
Total Actuarial Accrued Liability	**$16,483,425**	**$15,470,113**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$16,088,142	$16,483,425	$395,283

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$16,483,425	$15,470,113
2. Actuarial value of assets	11,675,058	11,551,677
3. Unfunded accrued liability *(1. – 2.)*	4,808,367	3,918,436
4. Funded percentage *(2. ÷ 1.)*	71%	75%
5. Combined valuation payroll	$2,095,494	$2,075,885
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	229%	189%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$896,977	$69,744	$64,487	$891,720	$70,670
December 31, 2015	$3,021,459	$218,629	$217,875	$3,020,705	$221,038
December 31, 2016	N/A	N/A	N/A	$895,942	$63,259
Total				**$4,808,367**	**$354,967**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$15,470,113
b. Normal cost at December 31, 2015 (excluding assumed expenses)	158,523
c. Benefit payments during 2016	(944,036)
d. Interest at 7.50% to December 31, 2016	1,130,802
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	15,815,402
f. Change in actuarial accrued liability due to assumption, method, and plan changes	395,283
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	16,210,685
2. Actuarial accrued liability at December 31, 2016	16,483,425
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(272,740)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	11,551,677
b. Contributions for 2016[1]	208,018
c. Benefit payments and expenses during 2016	(952,042)
d. Interest at 7.50% to December 31, 2016	838,475
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	11,646,127
5. Actuarial value of assets at December 31, 2016	11,675,058
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	28,930
7. Total actuarial gain/(loss) *(3. + 6.)*	**($243,810)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$3,918,436**
2. Expected increase	250,838
3. Liability (gain)/loss	272,740
4. Asset (gain)/loss	(28,930)
5. Change due to changes in assumptions, methods, and plan provisions	395,283
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$4,808,367**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	30,893	183,171	16.87%	61,626	359,379	17.15%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	108,593	820,441	13.24%	104,587	810,109	12.91%
Total	**$139,486**	**$1,003,612**	**13.90%**	**$166,213**	**$1,169,488**	**14.21%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$4,808,367	$3,918,436
2. Next year's Tier 1/Tier 2 UAL payment	354,967	288,373
3. Combined valuation payroll	2,095,494	2,075,885
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	16.94%	13.89%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.90%	14.21%
b. Tier 1/Tier 2 UAL rate	16.94%	13.89%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	30.98%	28.25%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	18.60%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	18.60%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.72%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.72%
c. Funded percentage	71%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.72%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	14.88%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	22.32%
7. Advisory July 1, 2019 total pension rate, before adjustment	30.98%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(8.66%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	16.94%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	8.28%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	22.32%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.90%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.90%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	22.32%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.90%	14.21%
b. Tier 1/Tier 2 UAL rate	8.28%	4.24%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	22.32%	18.60%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$183,171	$0	$183,171
Tier 2	820,441	0	820,441
Tier 1/Tier 2 valuation payroll	1,003,612	0	1,003,612
OPSRP valuation payroll	1,091,882	0	1,091,882
Combined valuation payroll	**$2,095,494**	**$0**	**$2,095,494**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	3	14	20	37	5	14	17	36
Police & Fire	0	0	0	0	0	0	0	0
Total	3	14	20	37	5	14	17	36
Active Members with previous service segments with the employer								
General Service	3	5	N/A	8	5	6	N/A	11
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	3	5	N/A	8	5	6	N/A	11
Dormant Members								
General Service	7	7	5	19	4	9	5	18
Police & Fire	0	0	0	0	0	0	0	0
Total	7	7	5	19	4	9	5	18
Retired Members and Beneficiaries								
General Service	48	4	1	53	44	4	1	49
Police & Fire	0	0	0	0	0	0	0	0
Total	48	4	1	53	44	4	1	49
Grand Total Number of Members	**61**	**30**	**26**	**117**	**58**	**33**	**23**	**114**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44			2	3						5
45-49			1	1	1					3
50-54			2	2						4
55-59			1		2					3
60-64										
65-69			1	1						2
70-74										
75+										
Total	0	0	7	7	3	0	0	0	0	17

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	1	0
40-44	1	643
45-49	1	0
50-54	1	638
55-59	4	1,038
60-64	4	2,495
65-69	1	410
70-74	1	21
75+		
Total	14	1,132

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	1	1,280
55-59	3	1,045
60-64	12	1,453
65-69	15	1,820
70-74	13	1,027
75-79	5	1,594
80-84	3	1,986
85-89		
90-94		
95-99		
100+		
Total	52	1,470

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Salmon Harbor-Douglas County/2675
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Salmon Harbor-Douglas County/2675

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Salmon Harbor-Douglas County -- #2675

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Salmon Harbor-Douglas County to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Salmon Harbor-Douglas County.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Salmon Harbor-Douglas County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	11.57%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	2.84%	2.84%	2.84%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**15.97%**	**12.89%**	**17.62%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**16.46%**	**13.31%**	**18.04%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 79%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.41%	11.41%
Minimum 2019-2021 Rate	8.41%	5.41%
Maximum 2019-2021 Rate	14.41%	17.41%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,432,878	$1,451,916	$19,038	99%	$508,435	4%
12/31/2012	1,345,487	1,136,722	(208,765)	118%	382,708	(55%)
12/31/2013	1,410,640	1,283,678	(126,962)	110%	358,232	(35%)
12/31/2014	1,450,594	1,549,890	99,296	94%	396,567	25%
12/31/2015	1,377,121	1,639,524	262,403	84%	329,146	80%
12/31/2016	1,412,393	1,777,590	365,197	79%	421,168	87%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Salmon Harbor-Douglas County

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$365,197	$262,403
Allocated pooled OPSRP UAL	72,509	46,793
Side account	0	0
Net unfunded pension actuarial accrued liability	437,706	309,196
Combined valuation payroll	421,168	329,146
Net pension UAL as a percentage of payroll	104%	94%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($57)	$1,598

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$18,029	$15,674
Tier 1/Tier 2 valuation payroll	155,839	132,287
Tier 1/Tier 2 pension normal cost rate	11.57%	11.85%
Tier 1/ Tier 2 Actuarial accrued liability	$1,777,590	$1,639,524
Actuarial asset value	1,412,393	1,377,121
Tier 1/Tier 2 Unfunded actuarial accrued liability	365,197	262,403
Tier 1/ Tier 2 Funded status	79%	84%
Combined valuation payroll	$421,168	$329,146
Tier 1/Tier 2 UAL as a percentage of payroll	87%	80%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	2.84%	(0.44%)
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	1	2
Tier 1/Tier 2 retirees and beneficiaries	9	9

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	421,168	329,146
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$96,006	$91,082
2. Employer reserves	834,744	774,055
3. Benefits in force reserve	481,643	511,984
4. Total market value of assets *(1. + 2. + 3.)*	**$1,412,393**	**$1,377,121**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$1,377,121
2.	Regular employer contributions	5,579
3.	Benefit payments and expenses	(94,303)
4.	Adjustments [1]	28,648
5.	Interest credited	95,349
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,412,393**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	10,967	10,201
Tier 2 Police & Fire	0	0
Tier 2 General Service	7,062	5,473
Total	**$18,029**	**$15,674**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$17,650	$18,029	$379

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	328,555	281,461
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	309,798	250,945
▪ **Total Active Members**	**$638,353**	**$532,406**
Dormant Members	1,764	1,646
Retired Members and Beneficiaries	1,137,473	1,105,472
Total Actuarial Accrued Liability	**$1,777,590**	**$1,639,524**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,724,445	$1,777,590	$53,145

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,777,590	$1,639,524
2. Actuarial value of assets	1,412,393	1,377,121
3. Unfunded accrued liability *(1. – 2.)*	365,197	262,403
4. Funded percentage *(2. ÷ 1.)*	79%	84%
5. Combined valuation payroll	$421,168	$329,146
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	87%	80%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($126,864)	($9,864)	($9,121)	($126,121)	($9,995)
December 31, 2015	$389,267	$28,167	$28,070	$389,170	$28,477
December 31, 2016	N/A	N/A	N/A	$102,148	$7,212
Total				**$365,197**	**$25,694**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,639,524
b. Normal cost at December 31, 2015 (excluding assumed expenses)	14,949
c. Benefit payments during 2016	(93,510)
d. Interest at 7.50% to December 31, 2016	120,018
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,680,981
f. Change in actuarial accrued liability due to assumption, method, and plan changes	53,145
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,734,126
2. Actuarial accrued liability at December 31, 2016	1,777,590
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(43,464)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,377,121
b. Contributions for 2016[1]	5,579
c. Benefit payments and expenses during 2016	(94,303)
d. Interest at 7.50% to December 31, 2016	99,957
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,388,353
5. Actuarial value of assets at December 31, 2016	1,412,393
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	24,040
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($19,424)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$262,403**
2. Expected increase	30,225
3. Liability (gain)/loss	43,464
4. Asset (gain)/loss	(24,040)
5. Change due to changes in assumptions, methods, and plan provisions	53,145
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$365,197**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	10,967	87,552	12.53%	10,201	82,951	12.30%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	7,062	68,287	10.34%	5,473	49,336	11.09%
Total	**$18,029**	**$155,839**	**11.57%**	**$15,674**	**$132,287**	**11.85%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$365,197	$262,403
2. Next year's Tier 1/Tier 2 UAL payment	25,694	18,303
3. Combined valuation payroll	421,168	329,146
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	6.10%	5.56%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.57%	11.85%
b. Tier 1/Tier 2 UAL rate	6.10%	5.56%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	17.81%	17.56%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	11.41%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.41%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.28%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	79%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	8.41%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	14.41%
7. Advisory July 1, 2019 total pension rate, before adjustment	17.81%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(3.40%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	6.10%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	2.70%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	14.41%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.57%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.57%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	14.41%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.57%	11.85%
b. Tier 1/Tier 2 UAL rate	2.70%	(0.59%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	14.41%	11.41%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$87,552	$0	$87,552
Tier 2	68,287	0	68,287
Tier 1/Tier 2 valuation payroll	155,839	0	155,839
OPSRP valuation payroll	265,329	0	265,329
Combined valuation payroll	**$421,168**	**$0**	**$421,168**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	2	9	12	1	2	6	9
Police & Fire	0	0	0	0	0	0	0	0
Total	1	2	9	12	1	2	6	9
Active Members with previous service segments with the employer								
General Service	0	3	N/A	3	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	3	N/A	3	0	0	N/A	0
Dormant Members								
General Service	0	1	3	4	0	2	2	4
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	3	4	0	2	2	4
Retired Members and Beneficiaries								
General Service	7	2	0	9	7	2	0	9
Police & Fire	0	0	0	0	0	0	0	0
Total	7	2	0	9	7	2	0	9
Grand Total Number of Members	**8**	**8**	**12**	**28**	**8**	**6**	**8**	**22**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39				1						**1**
40-44										
45-49					1					**1**
50-54										
55-59										
60-64										
65-69										
70-74				1						**1**
75+										
Total	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**3**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69	1	147
70-74		
75+		
Total	1	147

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	1,480
65-69	4	1,043
70-74	2	297
75-79	1	265
80-84	1	1,739
85-89		
90-94		
95-99		
100+		
Total	9	917

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Siletz Rural Fire Protection District/2885
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Siletz Rural Fire Protection District/2885

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Siletz Rural Fire Protection District -- #2885

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Siletz Rural Fire Protection District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Siletz Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Siletz Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.95%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	0.14%	0.14%	0.14%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**18.65%**	**10.19%**	**14.92%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**19.14%**	**10.61%**	**15.34%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 100%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.86%	16.86%
Minimum 2019-2021 Rate	13.49%	10.12%
Maximum 2019-2021 Rate	20.23%	23.60%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$0	$0	$0	0%	$0	0%
12/31/2012	0	0	0	0%	0	0%
12/31/2013	0	0	0	0%	0	0%
12/31/2014	(20)	0	20	0%	135,428	0%
12/31/2015	(6)	0	6	0%	84,876	0%
12/31/2016	17	0	(17)	0%	99,191	0%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Siletz Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($17)	$6
Allocated pooled OPSRP UAL	17,077	12,066
Side account	0	0
Net unfunded pension actuarial accrued liability	17,060	12,072
Combined valuation payroll	99,191	84,876
Net pension UAL as a percentage of payroll	17%	14%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($14)	$412

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$0	$0
Tier 1/Tier 2 valuation payroll	0	0
Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
Tier 1/ Tier 2 Actuarial accrued liability	$0	$0
Actuarial asset value	17	(6)
Tier 1/Tier 2 Unfunded actuarial accrued liability	(17)	6
Tier 1/ Tier 2 Funded status	0%	0%
Combined valuation payroll	$99,191	$84,876
Tier 1/Tier 2 UAL as a percentage of payroll	0%	0%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	0.14%	0.15%
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	99,191	84,876
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	17	(6)
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$17**	**($6)**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	($6)
2. Regular employer contributions	164
3. Benefit payments and expenses	0
4. Adjustments [1]	(160)
5. Interest credited	19
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$17**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$0**	**$0**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$0**	**$0**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$0**	**$0**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$0	$0
2. Actuarial value of assets	17	(6)
3. Unfunded accrued liability *(1. – 2.)*	(17)	6
4. Funded percentage *(2. ÷ 1.)*	100%	100%
5. Combined valuation payroll	$99,191	$84,876
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	0%	0%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2015	$6	$0	$0	$6	$0
December 31, 2016	N/A	N/A	N/A	($23)	($2)
Total				**($17)**	**($2)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$0
b. Normal cost at December 31, 2015 (excluding assumed expenses)	0
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	0
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	0
f. Change in actuarial accrued liability due to assumption, method, and plan changes	0
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	0
2. Actuarial accrued liability at December 31, 2016	0
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	0
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	(6)
b. Contributions for 2016[1]	164
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	6
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	163
5. Actuarial value of assets at December 31, 2016	17
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(146)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($146)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$6**
2. Expected increase	(169)
3. Liability (gain)/loss	0
4. Asset (gain)/loss	146
5. Change due to changes in assumptions, methods, and plan provisions	0
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**($17)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$0**	**$0**	**16.95%**	**$0**	**$0**	**16.71%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($17)	$6
2. Next year's Tier 1/Tier 2 UAL payment	(2)	0
3. Combined valuation payroll	99,191	84,876
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.00%	0.00%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	0.00%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	17.09%	16.86%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.86%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.86%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.37%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.37%
c. Funded percentage	100%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.37%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.49%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	20.23%
7. Advisory July 1, 2019 total pension rate, before adjustment	17.09%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	0.00%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.00%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	17.09%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.95%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.95%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.09%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	0.00%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	17.09%	16.86%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	0	0	0
OPSRP valuation payroll	0	99,191	99,191
Combined valuation payroll	**$0**	**$99,191**	**$99,191**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	2	2	0	0	2	2
Total	0	0	2	2	0	0	2	2
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**0**	**0**	**2**	**2**	**0**	**0**	**2**	**2**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Sisters-Camp Sherman Rural Fire Protection District/2701
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Sisters-Camp Sherman Rural Fire Protection District/2701

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Sisters-Camp Sherman Rural Fire Protection District -- #2701

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Sisters-Camp Sherman Rural Fire Protection District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Sisters-Camp Sherman Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Sisters-Camp Sherman Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	20.71%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	17.84%	17.84%	17.84%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**40.11%**	**27.89%**	**32.62%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**40.60%**	**28.31%**	**33.04%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 41%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	27.53%	27.53%
Minimum 2019-2021 Rate	22.02%	16.51%
Maximum 2019-2021 Rate	33.04%	38.55%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$2,164,565	$2,972,903	$808,338	73%	$879,705	92%
12/31/2012	2,517,320	3,313,831	796,511	76%	1,179,483	68%
12/31/2013	2,983,177	3,635,619	652,442	82%	989,618	66%
12/31/2014	2,883,709	4,420,367	1,536,658	65%	815,021	189%
12/31/2015	2,455,291	5,855,478	3,400,187	42%	1,022,384	333%
12/31/2016	2,531,399	6,208,356	3,676,957	41%	1,126,606	326%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Sisters-Camp Sherman Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$3,676,957	$3,400,187
Allocated pooled OPSRP UAL	193,959	145,346
Side account	0	0
Net unfunded pension actuarial accrued liability	3,870,916	3,545,533
Combined valuation payroll	1,126,606	1,022,384
Net pension UAL as a percentage of payroll	344%	347%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($153)	$4,964

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	\$107,759	\$102,757
Tier 1/Tier 2 valuation payroll	520,412	531,077
Tier 1/Tier 2 pension normal cost rate	20.71%	19.35%
Tier 1/ Tier 2 Actuarial accrued liability	\$6,208,356	\$5,855,478
Actuarial asset value	2,531,399	2,455,291
Tier 1/Tier 2 Unfunded actuarial accrued liability	3,676,957	3,400,187
Tier 1/ Tier 2 Funded status	41%	42%
Combined valuation payroll	\$1,126,606	\$1,022,384
Tier 1/Tier 2 UAL as a percentage of payroll	326%	333%
Tier 1/Tier 2 UAL rate	17.84%	8.18%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	5	5
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	10	10

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,126,606	1,022,384
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$153,936	$145,270
2. Employer reserves	560,532	394,789
3. Benefits in force reserve	1,816,931	1,915,232
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,531,399**	**$2,455,291**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$2,455,291
2.	Regular employer contributions	129,405
3.	Benefit payments and expenses	(355,746)
4.	Adjustments [1]	128,615
5.	Interest credited	173,835
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,531,399**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$59,110	$54,931
Tier 1 General Service	0	0
Tier 2 Police & Fire	42,129	41,598
Tier 2 General Service	6,520	6,228
Total	**$107,759**	**$102,757**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$103,399	$107,759	$4,360

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$902,719	$811,242
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	608,002	551,249
▪ Tier 2 General Service	124,714	109,195
▪ **Total Active Members**	**$1,635,435**	**$1,471,686**
Dormant Members	281,967	248,439
Retired Members and Beneficiaries	4,290,954	4,135,353
Total Actuarial Accrued Liability	**$6,208,356**	**$5,855,478**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$6,001,360	$6,208,356	$206,996

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$6,208,356	$5,855,478
2. Actuarial value of assets	2,531,399	2,455,291
3. Unfunded accrued liability *(1. – 2.)*	3,676,957	3,400,187
4. Funded percentage *(2. ÷ 1.)*	41%	42%
5. Combined valuation payroll	$1,126,606	$1,022,384
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	326%	333%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$651,939	$50,691	$46,870	$648,118	$51,365
December 31, 2015	$2,748,248	$198,860	$198,174	$2,747,562	$201,051
December 31, 2016	N/A	N/A	N/A	$281,277	$19,860
Total				**$3,676,957**	**$272,276**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$5,855,478
b. Normal cost at December 31, 2015 (excluding assumed expenses)	98,002
c. Benefit payments during 2016	(352,754)
d. Interest at 7.50% to December 31, 2016	429,608
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	6,030,334
f. Change in actuarial accrued liability due to assumption, method, and plan changes	206,996
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	6,237,330
2. Actuarial accrued liability at December 31, 2016	6,208,356
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	28,974
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	2,455,291
b. Contributions for 2016[1]	129,405
c. Benefit payments and expenses during 2016	(355,746)
d. Interest at 7.50% to December 31, 2016	175,659
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	2,404,609
5. Actuarial value of assets at December 31, 2016	2,531,399
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	126,791
7. Total actuarial gain/(loss) *(3. + 6.)*	**$155,765**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$3,400,187**
2. Expected increase	225,539
3. Liability (gain)/loss	(28,974)
4. Asset (gain)/loss	(126,791)
5. Change due to changes in assumptions, methods, and plan provisions	206,996
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$3,676,957**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$59,110	$237,145	24.93%	$54,931	$234,950	23.38%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	42,129	218,561	19.28%	41,598	231,861	17.94%
Tier 2 General Service	6,520	64,706	10.08%	6,228	64,266	9.69%
Total	**$107,759**	**$520,412**	**20.71%**	**$102,757**	**$531,077**	**19.35%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$3,676,957	$3,400,187
2. Next year's Tier 1/Tier 2 UAL payment	272,276	249,551
3. Combined valuation payroll	1,126,606	1,022,384
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	24.17%	24.41%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	20.71%	19.35%
b. Tier 1/Tier 2 UAL rate	24.17%	24.41%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	45.02%	43.91%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	27.53%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	27.53%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	5.51%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	5.51%
c. Funded percentage	41%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	11.02%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	16.51%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	38.55%
7. Advisory July 1, 2019 total pension rate, before adjustment	45.02%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(6.47%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	24.17%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	17.70%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	38.55%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	20.71%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	20.71%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	38.55%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	20.71%	19.35%
b. Tier 1/Tier 2 UAL rate	17.70%	8.03%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	38.55%	27.53%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$237,145	$237,145
Tier 2	64,706	218,561	283,267
Tier 1/Tier 2 valuation payroll	64,706	455,706	520,412
OPSRP valuation payroll	51,627	554,567	606,194
Combined valuation payroll	**$116,333**	**$1,010,273**	**$1,126,606**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	2	3	0	1	2	3
Police & Fire	2	2	7	11	2	2	6	10
Total	2	3	9	14	2	3	8	13
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	2	N/A	2	0	1	N/A	1
Total	0	2	N/A	2	0	1	N/A	1
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	1	0	1	2	1	0	1	2
Total	1	0	1	2	1	0	1	2
Retired Members and Beneficiaries								
General Service	1	0	0	1	1	0	0	1
Police & Fire	6	3	0	9	6	3	0	9
Total	7	3	0	10	7	3	0	10
Grand Total Number of Members	**10**	**8**	**10**	**28**	**10**	**7**	**9**	**26**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39				1						**1**
40-44			2							**2**
45-49										
50-54							1			**1**
55-59					1					**1**
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**2**	**1**	**1**	**0**	**1**	**0**	**0**	**5**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	2,459
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total	1	2,459

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	1	5,473
45-49		
50-54	1	1,228
55-59	2	3,006
60-64	2	2,411
65-69	2	2,211
70-74	1	1,234
75-79	1	356
80-84		
85-89		
90-94		
95-99		
100+		
Total	10	2,355

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members’ regular account balances. 7.20% compounded annually on members’ variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

South Lane County Fire and Rescue/2859
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
South Lane County Fire and Rescue/2859

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
South Lane County Fire and Rescue/2859

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

South Lane County Fire and Rescue -- #2859

November 2017

Secondary Employers

2827 Creswell Rural Fire Protection District

CONTENTS

Executive Summary

Milliman has prepared this report for South Lane County Fire and Rescue to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to South Lane County Fire and Rescue.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for South Lane County Fire and Rescue

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.25%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	14.87%	14.87%	14.87%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**37.68%**	**24.92%**	**29.65%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**38.17%**	**25.34%**	**30.07%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 27%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	32.26%	32.26%
Minimum 2019-2021 Rate	25.81%	19.36%
Maximum 2019-2021 Rate	38.71%	45.16%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,034,896	$2,162,175	$1,127,279	48%	$1,340,704	84%
12/31/2012	1,027,376	2,784,912	1,757,536	37%	1,671,543	105%
12/31/2013	1,203,455	3,095,152	1,891,697	39%	1,700,151	111%
12/31/2014	1,196,903	4,052,766	2,855,863	30%	1,811,141	158%
12/31/2015	1,121,841	4,502,076	3,380,235	25%	1,775,628	190%
12/31/2016	1,294,597	4,791,660	3,497,063	27%	1,812,467	193%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

South Lane County Fire and Rescue

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$3,497,063	$3,380,235
Allocated pooled OPSRP UAL	312,038	252,430
Side account	0	0
Net unfunded pension actuarial accrued liability	3,809,101	3,632,665
Combined valuation payroll	1,812,467	1,775,628
Net pension UAL as a percentage of payroll	210%	205%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($247)	$8,622

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$132,415	$128,922
Tier 1/Tier 2 valuation payroll	623,172	647,395
Tier 1/Tier 2 pension normal cost rate	21.25%	19.91%
Tier 1/ Tier 2 Actuarial accrued liability	$4,791,660	$4,502,076
Actuarial asset value	1,294,597	1,121,841
Tier 1/Tier 2 Unfunded actuarial accrued liability	3,497,063	3,380,235
Tier 1/ Tier 2 Funded status	27%	25%
Combined valuation payroll	$1,812,467	$1,775,628
Tier 1/Tier 2 UAL as a percentage of payroll	193%	190%
Tier 1/Tier 2 UAL rate	14.87%	12.35%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	6	6
Tier 1/Tier 2 dormant members	2	3
Tier 1/Tier 2 retirees and beneficiaries	9	9

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,812,467	1,775,628
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$49,614	$46,852
2. Employer reserves	216,982	(9,754)
3. Benefits in force reserve	1,028,001	1,084,743
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,294,597**	**$1,121,841**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$1,121,841
2.	Regular employer contributions	215,262
3.	Benefit payments and expenses	(201,277)
4.	Adjustments [1]	69,557
5.	Interest credited	89,214
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,294,597**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$73,633	$70,739
Tier 1 General Service	0	0
Tier 2 Police & Fire	58,782	58,183
Tier 2 General Service	0	0
Total	**$132,415**	**$128,922**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$127,748	$132,415	$4,667

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$1,347,356	$1,220,102
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	994,225	904,596
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$2,341,581**	**$2,124,698**
Dormant Members	22,301	35,211
Retired Members and Beneficiaries	2,427,778	2,342,167
Total Actuarial Accrued Liability	**$4,791,660**	**$4,502,076**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$4,636,344	$4,791,660	$155,316

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$4,791,660	$4,502,076
2. Actuarial value of assets	1,294,597	1,121,841
3. Unfunded accrued liability *(1. – 2.)*	3,497,063	3,380,235
4. Funded percentage *(2. ÷ 1.)*	27%	25%
5. Combined valuation payroll	$1,812,467	$1,775,628
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	193%	190%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$1,890,238	$146,974	$135,896	$1,879,160	$148,927
December 31, 2015	$1,489,997	$107,815	$107,442	$1,489,624	$109,002
December 31, 2016	N/A	N/A	N/A	$128,279	$9,057
Total				**$3,497,063**	**$266,986**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$4,502,076
b. Normal cost at December 31, 2015 (excluding assumed expenses)	122,957
c. Benefit payments during 2016	(199,585)
d. Interest at 7.50% to December 31, 2016	334,782
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	4,760,230
f. Change in actuarial accrued liability due to assumption, method, and plan changes	155,316
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	4,915,546
2. Actuarial accrued liability at December 31, 2016	4,791,660
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	123,886
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,121,841
b. Contributions for 2016[1]	215,262
c. Benefit payments and expenses during 2016	(201,277)
d. Interest at 7.50% to December 31, 2016	84,663
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,220,489
5. Actuarial value of assets at December 31, 2016	1,294,597
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	74,108
7. Total actuarial gain/(loss) *(3. + 6.)*	**$197,994**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$3,380,235**
2. Expected increase	159,506
3. Liability (gain)/loss	(123,886)
4. Asset (gain)/loss	(74,108)
5. Change due to changes in assumptions, methods, and plan provisions	155,316
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$3,497,063**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$73,633	$305,778	24.08%	$70,739	$315,741	22.40%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	58,782	317,394	18.52%	58,183	331,654	17.54%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$132,415**	**$623,172**	**21.25%**	**$128,922**	**$647,395**	**19.91%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$3,497,063	$3,380,235
2. Next year's Tier 1/Tier 2 UAL payment	266,986	254,789
3. Combined valuation payroll	1,812,467	1,775,628
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	14.73%	14.35%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.25%	19.91%
b. Tier 1/Tier 2 UAL rate	14.73%	14.35%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	36.12%	34.41%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	32.26%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	32.26%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	6.45%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	6.45%
c. Funded percentage	27%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	12.90%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	19.36%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	45.16%
7. Advisory July 1, 2019 total pension rate, before adjustment	36.12%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	14.73%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	14.73%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	36.12%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	21.25%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.25%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	36.12%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.25%	19.91%
b. Tier 1/Tier 2 UAL rate	14.73%	12.20%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	36.12%	32.26%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$305,778	$305,778
Tier 2	0	317,394	317,394
Tier 1/Tier 2 valuation payroll	0	623,172	623,172
OPSRP valuation payroll	53,400	1,135,895	1,189,295
Combined valuation payroll	**$53,400**	**$1,759,067**	**$1,812,467**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	2	2	0	0	2	2
Police & Fire	3	3	13	19	3	3	12	18
Total	3	3	15	21	3	3	14	20
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	1	4	N/A	5	1	4	N/A	5
Total	1	4	N/A	5	1	4	N/A	5
Dormant Members								
General Service	0	1	0	1	0	1	0	1
Police & Fire	0	1	1	2	1	1	0	2
Total	0	2	1	3	1	2	0	3
Retired Members and Beneficiaries								
General Service	1	0	0	1	1	0	0	1
Police & Fire	7	1	0	8	7	1	0	8
Total	8	1	0	9	8	1	0	9
Grand Total Number of Members	**12**	**10**	**16**	**38**	**13**	**10**	**14**	**37**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39				1						**1**
40-44					1					**1**
45-49			1	1						**2**
50-54						1				**1**
55-59						1				**1**
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**2**	**1**	**2**	**0**	**0**	**0**	**6**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	183
50-54		
55-59		
60-64	1	56
65-69		
70-74		
75+		
Total	2	119

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	2	1,476
60-64	4	1,699
65-69	3	1,177
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	9	1,475

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Southwestern Polk County Rural Fire Protection District/2803
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Southwestern Polk County Rural Fire Protection District/2803

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The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA	Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary	Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Southwestern Polk County Rural Fire Protection District -- #2803

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Southwestern Polk County Rural Fire Protection District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Southwestern Polk County Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Southwestern Polk County Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.95%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(1.40%)	(1.40%)	(1.40%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**17.11%**	**8.65%**	**13.38%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**17.60%**	**9.07%**	**13.80%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 111%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	13.61%	13.61%
Minimum 2019-2021 Rate	10.61%	7.61%
Maximum 2019-2021 Rate	16.61%	19.61%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$67,029	$59,440	($7,589)	113%	$36,767	(21%)
12/31/2012	71,598	57,004	(14,594)	126%	37,423	(39%)
12/31/2013	76,824	56,412	(20,412)	136%	39,029	(52%)
12/31/2014	75,078	62,470	(12,608)	120%	40,494	(31%)
12/31/2015	70,710	62,009	(8,701)	114%	41,337	(21%)
12/31/2016	70,203	63,071	(7,132)	111%	42,120	(17%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Southwestern Polk County Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($7,132)	($8,701)
Allocated pooled OPSRP UAL	7,251	5,877
Side account	0	0
Net unfunded pension actuarial accrued liability	119	(2,824)
Combined valuation payroll	42,120	41,337
Net pension UAL as a percentage of payroll	0%	(7%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($6)	$201

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$0	$0
Tier 1/Tier 2 valuation payroll	0	0
Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
Tier 1/ Tier 2 Actuarial accrued liability	$63,071	$62,009
Actuarial asset value	70,203	70,710
Tier 1/Tier 2 Unfunded actuarial accrued liability	(7,132)	(8,701)
Tier 1/ Tier 2 Funded status	111%	114%
Combined valuation payroll	$42,120	$41,337
Tier 1/Tier 2 UAL as a percentage of payroll	(17%)	(21%)
Tier 1/Tier 2 UAL rate	(1.40%)	(3.10%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	2	2

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	42,120	41,337
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	43,496	41,991
3. Benefits in force reserve	26,707	28,719
4. Total market value of assets ***(1. + 2. + 3.)***	**$70,203**	**$70,710**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$70,710
2.	Regular employer contributions	(1,341)
3.	Benefit payments and expenses	(5,229)
4.	Adjustments [1]	1,321
5.	Interest credited	4,742
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$70,203**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$0**	**$0**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$0**	**$0**
Dormant Members	0	0
Retired Members and Beneficiaries	63,071	62,009
Total Actuarial Accrued Liability	**$63,071**	**$62,009**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$61,433	$63,071	$1,638

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$63,071	$62,009
2. Actuarial value of assets	70,203	70,710
3. Unfunded accrued liability *(1. – 2.)*	(7,132)	(8,701)
4. Funded percentage *(2. ÷ 1.)*	111%	114%
5. Combined valuation payroll	$42,120	$41,337
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(17%)	(21%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($20,397)	($1,586)	($1,466)	($20,277)	($1,607)
December 31, 2015	$11,696	$846	$843	$11,693	$856
December 31, 2016	N/A	N/A	N/A	$1,452	$103
Total				**($7,132)**	**($648)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$62,009
b. Normal cost at December 31, 2015 (excluding assumed expenses)	0
c. Benefit payments during 2016	(5,185)
d. Interest at 7.50% to December 31, 2016	4,456
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	61,280
f. Change in actuarial accrued liability due to assumption, method, and plan changes	1,638
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	62,918
2. Actuarial accrued liability at December 31, 2016	63,071
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(153)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	70,710
b. Contributions for 2016[1]	(1,341)
c. Benefit payments and expenses during 2016	(5,229)
d. Interest at 7.50% to December 31, 2016	5,057
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	69,196
5. Actuarial value of assets at December 31, 2016	70,203
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	1,007
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$854**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($8,701)**
2. Expected increase	785
3. Liability (gain)/loss	153
4. Asset (gain)/loss	(1,007)
5. Change due to changes in assumptions, methods, and plan provisions	1,638
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**($7,132)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$0**	**$0**	**16.95%**	**$0**	**$0**	**16.71%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($7,132)	($8,701)
2. Next year's Tier 1/Tier 2 UAL payment	(648)	(740)
3. Combined valuation payroll	42,120	41,337
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(1.54%)	(1.79%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	(1.54%)	(1.79%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	15.55%	15.07%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	13.61%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	13.61%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.72%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	111%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	10.61%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	16.61%
7. Advisory July 1, 2019 total pension rate, before adjustment	15.55%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(1.54%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(1.54%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	15.55%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.95%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.95%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	15.55%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	(1.54%)	(3.25%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	15.55%	13.61%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	0	0	0
OPSRP valuation payroll	42,120	0	42,120
Combined valuation payroll	**$42,120**	**$0**	**$42,120**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	1	1	0	0	1	1
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	1	1
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	1	0	1	0	1	0	1
Police & Fire	0	1	0	1	0	1	0	1
Total	0	2	0	2	0	2	0	2
Grand Total Number of Members	**0**	**2**	**1**	**3**	**0**	**2**	**1**	**3**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69	1	87
70-74	1	367
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	2	227

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Springfield Utility Board/2767
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Springfield Utility Board/2767

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Springfield Utility Board -- #2767

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Springfield Utility Board to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Springfield Utility Board.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Springfield Utility Board

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.72%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(2.31%)	(2.31%)	(2.31%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**15.97%**	**7.74%**	**12.47%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**16.46%**	**8.16%**	**12.89%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 90%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.41%	11.41%
Minimum 2019-2021 Rate	8.41%	5.41%
Maximum 2019-2021 Rate	14.41%	17.41%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$248,311	$257,708	$9,397	96%	$79,824	12%
12/31/2012	292,221	250,720	(41,501)	117%	83,649	(50%)
12/31/2013	336,955	291,087	(45,868)	116%	86,946	(53%)
12/31/2014	366,511	375,364	8,853	98%	90,502	10%
12/31/2015	388,107	427,949	39,842	91%	96,755	41%
12/31/2016	421,905	466,948	45,043	90%	93,943	48%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Springfield Utility Board

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	$45,043	$39,842
Allocated pooled OPSRP UAL	16,173	13,755
Side account	0	0
Net unfunded pension actuarial accrued liability	61,216	53,597
Combined valuation payroll	93,943	96,755
Net pension UAL as a percentage of payroll	65%	55%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($13)	$470

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$15,711	$15,355
Tier 1/Tier 2 valuation payroll	93,943	96,755
Tier 1/Tier 2 pension normal cost rate	16.72%	15.87%
Tier 1/ Tier 2 Actuarial accrued liability	$466,948	$427,949
Actuarial asset value	421,905	388,107
Tier 1/Tier 2 Unfunded actuarial accrued liability	45,043	39,842
Tier 1/ Tier 2 Funded status	90%	91%
Combined valuation payroll	$93,943	$96,755
Tier 1/Tier 2 UAL as a percentage of payroll	48%	41%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(2.31%)	(4.46%)
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	93,943	96,755
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$138,374	$131,114
2. Employer reserves	283,531	256,993
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$421,905**	**$388,107**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$388,107
2. Regular employer contributions	7,716
3. Benefit payments and expenses	0
4. Adjustments [1]	(2,391)
5. Interest credited	28,474
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$421,905**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	15,711	15,355
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$15,711**	**$15,355**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$15,557	$15,711	$154

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	466,948	427,949
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$466,948**	**$427,949**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$466,948**	**$427,949**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$446,782	$466,948	$20,166

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$466,948	$427,949
2. Actuarial value of assets	421,905	388,107
3. Unfunded accrued liability *(1. – 2.)*	45,043	39,842
4. Funded percentage *(2. ÷ 1.)*	90%	91%
5. Combined valuation payroll	$93,943	$96,755
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	48%	41%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($45,833)	($3,564)	($3,295)	($45,564)	($3,611)
December 31, 2015	$85,675	$6,199	$6,178	$85,654	$6,268
December 31, 2016	N/A	N/A	N/A	$4,953	$350
Total				**$45,043**	**$3,007**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$427,949
b. Normal cost at December 31, 2015 (excluding assumed expenses)	14,644
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	32,645
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	475,238
f. Change in actuarial accrued liability due to assumption, method, and plan changes	20,166
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	495,404
2. Actuarial accrued liability at December 31, 2016	466,948
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	28,456
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	388,107
b. Contributions for 2016[1]	7,716
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	29,397
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	425,220
5. Actuarial value of assets at December 31, 2016	421,905
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(3,315)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$25,141**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$39,842**
2. Expected increase	10,176
3. Liability (gain)/loss	(28,456)
4. Asset (gain)/loss	3,315
5. Change due to changes in assumptions, methods, and plan provisions	20,166
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$45,043**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	15,711	93,943	16.72%	15,355	96,755	15.87%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$15,711**	**$93,943**	**16.72%**	**$15,355**	**$96,755**	**15.87%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$45,043	$39,842
2. Next year's Tier 1/Tier 2 UAL payment	3,007	2,635
3. Combined valuation payroll	93,943	96,755
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	3.20%	2.72%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.72%	15.87%
b. Tier 1/Tier 2 UAL rate	3.20%	2.72%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	20.06%	18.74%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	11.41%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.41%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.28%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	90%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	8.41%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	14.41%
7. Advisory July 1, 2019 total pension rate, before adjustment	20.06%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(5.65%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	3.20%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(2.45%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	14.41%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.72%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.72%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	14.41%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.72%	15.87%
b. Tier 1/Tier 2 UAL rate	(2.45%)	(4.61%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	14.41%	11.41%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$93,943	$0	$93,943
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	93,943	0	93,943
OPSRP valuation payroll	0	0	0
Combined valuation payroll	**$93,943**	**$0**	**$93,943**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	0	1	1	0	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	0	1	1	0	0	1
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**1**	**0**	**0**	**1**	**1**	**0**	**0**	**1**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59						1				1
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	1	0	0	0	1

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Sunrise Water Authority/2845
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Sunrise Water Authority/2845

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Sunrise Water Authority -- #2845

November 2017

Secondary Employers

2586	Mt Scott Water District
2656	Damascus Water District

CONTENTS

Executive Summary

Milliman has prepared this report for Sunrise Water Authority to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Sunrise Water Authority.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Sunrise Water Authority

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	10.85%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	9.97%	9.97%	9.97%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**22.38%**	**20.02%**	**24.75%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**22.87%**	**20.44%**	**25.17%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 64%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	19.16%	19.16%
Minimum 2019-2021 Rate	15.33%	11.50%
Maximum 2019-2021 Rate	22.99%	26.82%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$2,709,139	$3,974,445	$1,265,306	68%	$1,060,987	119%
12/31/2012	2,973,563	4,013,502	1,039,939	74%	1,130,346	92%
12/31/2013	3,222,903	4,026,330	803,427	80%	1,068,798	75%
12/31/2014	3,273,211	4,606,451	1,333,240	71%	1,191,064	112%
12/31/2015	3,175,704	4,854,173	1,678,469	65%	1,094,333	153%
12/31/2016	3,285,905	5,104,660	1,818,755	64%	1,399,276	130%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Sunrise Water Authority

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$1,818,755	$1,678,469
Allocated pooled OPSRP UAL	240,902	155,575
Side account	0	0
Net unfunded pension actuarial accrued liability	2,059,657	1,834,044
Combined valuation payroll	1,399,276	1,094,333
Net pension UAL as a percentage of payroll	147%	168%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($191)	$5,314

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$36,186	$33,407
Tier 1/Tier 2 valuation payroll	333,400	305,316
Tier 1/Tier 2 pension normal cost rate	10.85%	10.94%
Tier 1/ Tier 2 Actuarial accrued liability	$5,104,660	$4,854,173
Actuarial asset value	3,285,905	3,175,704
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,818,755	1,678,469
Tier 1/ Tier 2 Funded status	64%	65%
Combined valuation payroll	$1,399,276	$1,094,333
Tier 1/Tier 2 UAL as a percentage of payroll	130%	153%
Tier 1/Tier 2 UAL rate	9.97%	8.22%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	4	4
Tier 1/Tier 2 dormant members	6	5
Tier 1/Tier 2 retirees and beneficiaries	16	16

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,399,276	1,094,333
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$420,356	$398,163
2. Employer reserves	1,382,706	1,190,846
3. Benefits in force reserve	1,482,844	1,586,695
4. Total market value of assets ***(1. + 2. + 3.)***	**$3,285,905**	**$3,175,704**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$3,175,704
2. Regular employer contributions	101,004
3. Benefit payments and expenses	(290,334)
4. Adjustments [1]	76,499
5. Interest credited	223,032
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$3,285,905**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	9,580	9,404
Tier 2 Police & Fire	0	0
Tier 2 General Service	26,606	24,003
Total	**$36,186**	**$33,407**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$35,640	$36,186	$546

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	337,930	365,773
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	754,169	629,305
▪ **Total Active Members**	**$1,092,099**	**$995,078**
Dormant Members	510,603	433,116
Retired Members and Beneficiaries	3,501,958	3,425,979
Total Actuarial Accrued Liability	**$5,104,660**	**$4,854,173**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$5,005,884	$5,104,660	$98,776

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$5,104,660	$4,854,173
2. Actuarial value of assets	3,285,905	3,175,704
3. Unfunded accrued liability *(1. – 2.)*	1,818,755	1,678,469
4. Funded percentage *(2. ÷ 1.)*	64%	65%
5. Combined valuation payroll	$1,399,276	$1,094,333
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	130%	153%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$802,807	$62,422	$57,717	$798,102	$63,251
December 31, 2015	$875,662	$63,362	$63,143	$875,443	$64,060
December 31, 2016	N/A	N/A	N/A	$145,210	$10,253
Total				**$1,818,755**	**$137,564**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$4,854,173
b. Normal cost at December 31, 2015 (excluding assumed expenses)	31,862
c. Benefit payments during 2016	(287,892)
d. Interest at 7.50% to December 31, 2016	354,462
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	4,952,605
f. Change in actuarial accrued liability due to assumption, method, and plan changes	98,776
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	5,051,381
2. Actuarial accrued liability at December 31, 2016	5,104,660
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(53,279)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	3,175,704
b. Contributions for 2016[1]	101,004
c. Benefit payments and expenses during 2016	(290,334)
d. Interest at 7.50% to December 31, 2016	231,078
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	3,217,452
5. Actuarial value of assets at December 31, 2016	3,285,905
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	68,453
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$15,174**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$1,678,469**
2. Expected increase	56,684
3. Liability (gain)/loss	53,279
4. Asset (gain)/loss	(68,453)
5. Change due to changes in assumptions, methods, and plan provisions	98,776
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$1,818,755**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	9,580	80,857	11.85%	9,404	82,795	11.36%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	26,606	252,543	10.54%	24,003	222,521	10.79%
Total	**$36,186**	**$333,400**	**10.85%**	**$33,407**	**$305,316**	**10.94%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$1,818,755	$1,678,469
2. Next year's Tier 1/Tier 2 UAL payment	137,564	125,784
3. Combined valuation payroll	1,399,276	1,094,333
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	9.83%	11.49%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	10.85%	10.94%
b. Tier 1/Tier 2 UAL rate	9.83%	11.49%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	20.82%	22.58%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	19.16%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	19.16%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.83%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.83%
c. Funded percentage	64%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.13%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.03%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	25.29%
7. Advisory July 1, 2019 total pension rate, before adjustment	20.82%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	9.83%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	9.83%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	20.82%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	10.85%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	10.85%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	20.82%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	10.85%	10.94%
b. Tier 1/Tier 2 UAL rate	9.83%	8.07%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	20.82%	19.16%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$80,857	$0	$80,857
Tier 2	252,543	0	252,543
Tier 1/Tier 2 valuation payroll	333,400	0	333,400
OPSRP valuation payroll	1,065,876	0	1,065,876
Combined valuation payroll	**$1,399,276**	**$0**	**$1,399,276**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	3	15	19	1	3	11	15
Police & Fire	0	0	0	0	0	0	0	0
Total	1	3	15	19	1	3	11	15
Active Members with previous service segments with the employer								
General Service	2	1	N/A	3	3	1	N/A	4
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	2	1	N/A	3	3	1	N/A	4
Dormant Members								
General Service	4	2	2	8	3	2	3	8
Police & Fire	0	0	0	0	0	0	0	0
Total	4	2	2	8	3	2	3	8
Retired Members and Beneficiaries								
General Service	15	1	0	16	15	1	0	16
Police & Fire	0	0	0	0	0	0	0	0
Total	15	1	0	16	15	1	0	16
Grand Total Number of Members	**22**	**7**	**17**	**46**	**22**	**7**	**14**	**43**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39				1						**1**
40-44										
45-49				2	1					**3**
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**0**	**4**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	913
50-54	3	1,148
55-59	1	321
60-64	1	59
65-69		
70-74		
75+		
Total	6	790

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	4,656
65-69	3	1,309
70-74	4	1,345
75-79	3	1,690
80-84	2	2,069
85-89	1	1,217
90-94	2	666
95-99		
100+		
Total	16	1,608

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Sweet Home Cemetery/2643
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Sweet Home Cemetery/2643

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Sweet Home Cemetery/2643

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Sweet Home Cemetery -- #2643

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Sweet Home Cemetery to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Sweet Home Cemetery.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Sweet Home Cemetery

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	17.15%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	4.11%	4.11%	4.11%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**22.82%**	**14.16%**	**18.89%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**23.31%**	**14.58%**	**19.31%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 87%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	20.39%	20.39%
Minimum 2019-2021 Rate	16.31%	12.23%
Maximum 2019-2021 Rate	24.47%	28.55%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$350,642	$511,257	$160,615	69%	$27,288	589%
12/31/2012	388,006	464,278	76,272	84%	84,731	90%
12/31/2013	441,442	485,592	44,150	91%	107,083	41%
12/31/2014	415,137	462,736	47,599	90%	114,408	42%
12/31/2015	423,852	477,886	54,034	89%	118,271	46%
12/31/2016	444,166	508,620	64,454	87%	124,875	52%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Sweet Home Cemetery

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$64,454	$54,034
Allocated pooled OPSRP UAL	21,499	16,814
Side account	0	0
Net unfunded pension actuarial accrued liability	85,953	70,848
Combined valuation payroll	124,875	118,271
Net pension UAL as a percentage of payroll	69%	60%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($17)	$574

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$6,837	$6,583
Tier 1/Tier 2 valuation payroll	39,860	39,339
Tier 1/Tier 2 pension normal cost rate	17.15%	16.73%
Tier 1/ Tier 2 Actuarial accrued liability	$508,620	$477,886
Actuarial asset value	444,166	423,852
Tier 1/Tier 2 Unfunded actuarial accrued liability	64,454	54,034
Tier 1/ Tier 2 Funded status	87%	89%
Combined valuation payroll	$124,875	$118,271
Tier 1/Tier 2 UAL as a percentage of payroll	52%	46%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	4.11%	3.66%
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	1	1

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) RHIA	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	124,875	118,271
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$79,045	$74,898
2. Employer reserves	228,982	205,066
3. Benefits in force reserve	136,139	143,888
4. Total market value of assets ***(1. + 2. + 3.)***	**$444,166**	**$423,852**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$423,852
2.	Regular employer contributions	8,755
3.	Benefit payments and expenses	(26,655)
4.	Adjustments [1]	8,104
5.	Interest credited	30,111
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$444,166**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	6,837	6,583
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$6,837**	**$6,583**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$6,807	$6,837	$30

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	187,106	167,205
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$187,106**	**$167,205**
Dormant Members	0	0
Retired Members and Beneficiaries	321,514	310,681
Total Actuarial Accrued Liability	**$508,620**	**$477,886**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$494,163	$508,620	$14,457

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$508,620	$477,886
2. Actuarial value of assets	444,166	423,852
3. Unfunded accrued liability *(1. – 2.)*	64,454	54,034
4. Funded percentage *(2. ÷ 1.)*	87%	89%
5. Combined valuation payroll	$124,875	$118,271
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	52%	46%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$44,116	$3,430	$3,172	$43,858	$3,476
December 31, 2015	$9,918	$718	$715	$9,915	$726
December 31, 2016	N/A	N/A	N/A	$10,681	$754
Total				**$64,454**	**$4,956**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$477,886
b. Normal cost at December 31, 2015 (excluding assumed expenses)	6,278
c. Benefit payments during 2016	(26,431)
d. Interest at 7.50% to December 31, 2016	35,086
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	492,819
f. Change in actuarial accrued liability due to assumption, method, and plan changes	14,457
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	507,276
2. Actuarial accrued liability at December 31, 2016	508,620
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(1,344)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	423,852
b. Contributions for 2016[1]	8,755
c. Benefit payments and expenses during 2016	(26,655)
d. Interest at 7.50% to December 31, 2016	31,118
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	437,069
5. Actuarial value of assets at December 31, 2016	444,166
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	7,097
7. Total actuarial gain/(loss) *(3. + 6.)*	**$5,753**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$54,034**
2. Expected increase	1,716
3. Liability (gain)/loss	1,344
4. Asset (gain)/loss	(7,097)
5. Change due to changes in assumptions, methods, and plan provisions	14,457
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$64,454**

1 *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	6,837	39,860	17.15%	6,583	39,339	16.73%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$6,837**	**$39,860**	**17.15%**	**$6,583**	**$39,339**	**16.73%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$64,454	$54,034
2. Next year's Tier 1/Tier 2 UAL payment	4,956	4,148
3. Combined valuation payroll	124,875	118,271
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	3.97%	3.51%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.15%	16.73%
b. Tier 1/Tier 2 UAL rate	3.97%	3.51%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	21.26%	20.39%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	20.39%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	20.39%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	4.08%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.08%
c. Funded percentage	87%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.08%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	16.31%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	24.47%
7. Advisory July 1, 2019 total pension rate, before adjustment	21.26%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	3.97%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.97%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	21.26%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.15%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.15%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	21.26%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.15%	16.73%
b. Tier 1/Tier 2 UAL rate	3.97%	3.51%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	21.26%	20.39%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$39,860	$0	$39,860
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	39,860	0	39,860
OPSRP valuation payroll	85,015	0	85,015
Combined valuation payroll	**$124,875**	**$0**	**$124,875**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	2	3	1	0	2	3
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	2	3	1	0	2	3
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	1	0	0	1	1	0	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	0	1	1	0	0	1
Grand Total Number of Members	**2**	**0**	**2**	**4**	**2**	**0**	**2**	**4**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59					1					**1**
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69	1	1,807
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	1	1,807

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Tillamook 9-1-1/2722
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Tillamook 9-1-1/2722

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No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Tillamook 9-1-1 -- #2722

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Tillamook 9-1-1 to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Tillamook 9-1-1.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Tillamook 9-1-1

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.56%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(2.09%)	(2.09%)	(2.09%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**13.03%**	**7.96%**	**12.69%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**13.52%**	**8.38%**	**13.11%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 90%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	8.47%	8.47%
Minimum 2019-2021 Rate	5.47%	2.47%
Maximum 2019-2021 Rate	11.47%	14.47%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,800,706	$1,660,388	($140,318)	108%	$561,258	(25%)
12/31/2012	2,056,968	1,641,966	(415,002)	125%	525,267	(79%)
12/31/2013	2,338,997	1,713,100	(625,897)	137%	530,964	(118%)
12/31/2014	2,358,457	2,145,269	(213,188)	110%	567,404	(38%)
12/31/2015	2,424,064	2,256,633	(167,431)	107%	557,353	(30%)
12/31/2016	2,284,214	2,531,977	247,763	90%	664,473	37%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Tillamook 9-1-1

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$247,763	($167,431)
Allocated pooled OPSRP UAL	114,397	79,236
Side account	0	0
Net unfunded pension actuarial accrued liability	362,160	(88,195)
Combined valuation payroll	664,473	557,353
Net pension UAL as a percentage of payroll	55%	(16%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($90)	$2,706

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$38,656	$35,976
Tier 1/Tier 2 valuation payroll	285,167	264,586
Tier 1/Tier 2 pension normal cost rate	13.56%	13.60%
Tier 1/ Tier 2 Actuarial accrued liability	$2,531,977	$2,256,633
Actuarial asset value	2,284,214	2,424,064
Tier 1/Tier 2 Unfunded actuarial accrued liability	247,763	(167,431)
Tier 1/ Tier 2 Funded status	90%	107%
Combined valuation payroll	$664,473	$557,353
Tier 1/Tier 2 UAL as a percentage of payroll	37%	(30%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(2.09%)	(5.13%)
Tier 1/Tier 2 active members [1]	4	4
Tier 1/Tier 2 dormant members	4	5
Tier 1/Tier 2 retirees and beneficiaries	6	4

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	664,473	557,353
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$426,569	$699,661
2. Employer reserves	1,398,142	1,553,821
3. Benefits in force reserve	459,504	170,583
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,284,214**	**$2,424,064**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$2,424,064
2. Regular employer contributions	(10,104)
3. Benefit payments and expenses	(89,968)
4. Adjustments [1]	(208,384)
5. Interest credited	168,607
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,284,214**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	25,962	24,551
Tier 2 Police & Fire	0	0
Tier 2 General Service	12,694	11,425
Total	**$38,656**	**$35,976**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$38,413	$38,656	$243

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	571,658	664,845
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	384,844	323,429
▪ **Total Active Members**	**$956,502**	**$988,274**
Dormant Members	490,289	900,039
Retired Members and Beneficiaries	1,085,186	368,320
Total Actuarial Accrued Liability	**$2,531,977**	**$2,256,633**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,473,541	$2,531,977	$58,436

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$2,531,977	$2,256,633
2. Actuarial value of assets	2,284,214	2,424,064
3. Unfunded accrued liability *(1. – 2.)*	247,763	(167,431)
4. Funded percentage *(2. ÷ 1.)*	90%	107%
5. Combined valuation payroll	$664,473	$557,353
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	37%	(30%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($625,414)	($48,629)	($44,963)	($621,748)	($49,275)
December 31, 2015	$457,983	$33,139	$33,025	$457,869	$33,504
December 31, 2016	N/A	N/A	N/A	$411,642	$29,065
Total				**$247,763**	**$13,294**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$2,256,633
b. Normal cost at December 31, 2015 (excluding assumed expenses)	34,312
c. Benefit payments during 2016	(89,212)
d. Interest at 7.50% to December 31, 2016	167,189
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,368,922
f. Change in actuarial accrued liability due to assumption, method, and plan changes	58,436
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	2,427,358
2. Actuarial accrued liability at December 31, 2016	2,531,977
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(104,619)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	2,424,064
b. Contributions for 2016[1]	(10,104)
c. Benefit payments and expenses during 2016	(89,968)
d. Interest at 7.50% to December 31, 2016	178,052
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	2,502,044
5. Actuarial value of assets at December 31, 2016	2,284,214
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(217,829)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($322,448)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($167,431)**
2. Expected increase	34,310
3. Liability (gain)/loss	104,619
4. Asset (gain)/loss	217,829
5. Change due to changes in assumptions, methods, and plan provisions	58,436
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$247,763**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	25,962	156,560	16.58%	24,551	145,724	16.85%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	12,694	128,607	9.87%	11,425	118,862	9.61%
Total	**$38,656**	**$285,167**	**13.56%**	**$35,976**	**$264,586**	**13.60%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$247,763	($167,431)
2. Next year's Tier 1/Tier 2 UAL payment	13,294	(15,490)
3. Combined valuation payroll	664,473	557,353
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	2.00%	(2.78%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.56%	13.60%
b. Tier 1/Tier 2 UAL rate	2.00%	(2.78%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	15.70%	10.97%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	8.47%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	8.47%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.69%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	90%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	5.47%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	11.47%
7. Advisory July 1, 2019 total pension rate, before adjustment	15.70%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(4.23%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	2.00%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(2.23%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	11.47%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.56%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.56%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	11.47%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	13.56%	13.60%
b. Tier 1/Tier 2 UAL rate	(2.23%)	(5.28%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	11.47%	8.47%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$156,560	$0	$156,560
Tier 2	128,607	0	128,607
Tier 1/Tier 2 valuation payroll	285,167	0	285,167
OPSRP valuation payroll	379,306	0	379,306
Combined valuation payroll	**$664,473**	**$0**	**$664,473**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	2	9	13	2	2	7	11
Police & Fire	0	0	0	0	0	0	0	0
Total	2	2	9	13	2	2	7	11
Active Members with previous service segments with the employer								
General Service	3	5	N/A	8	4	4	N/A	8
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	3	5	N/A	8	4	4	N/A	8
Dormant Members								
General Service	4	0	1	5	5	0	2	7
Police & Fire	0	0	0	0	0	0	0	0
Total	4	0	1	5	5	0	2	7
Retired Members and Beneficiaries								
General Service	6	0	0	6	4	0	0	4
Police & Fire	0	0	0	0	0	0	0	0
Total	6	0	0	6	4	0	0	4
Grand Total Number of Members	**15**	**7**	**10**	**32**	**15**	**6**	**9**	**30**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39			1							**1**
40-44			1							**1**
45-49						1				**1**
50-54						1				**1**
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**4**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	2	1,852
50-54	1	1,518
55-59	1	0
60-64		
65-69		
70-74		
75+		
Total	4	1,305

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	3	1,304
60-64	1	191
65-69	1	96
70-74	1	1,904
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	6	1,017

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Tillamook County Soil And Water Conservation District/2821
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Tillamook County Soil And Water Conservation District/2821

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Tillamook County Soil And Water Conservation District/2821

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Tillamook County Soil And Water Conservation District -- #2821

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Tillamook County Soil And Water Conservation District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Tillamook County Soil And Water Conservation District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Tillamook County Soil And Water Conservation District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	12.94%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	5.40%	5.40%	5.40%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**19.90%**	**15.45%**	**20.18%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**20.39%**	**15.87%**	**20.60%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 72%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	15.28%	15.28%
Minimum 2019-2021 Rate	12.22%	9.16%
Maximum 2019-2021 Rate	18.34%	21.40%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$238,346	$275,346	$37,000	87%	$58,527	63%
12/31/2012	285,362	301,823	16,461	95%	63,910	26%
12/31/2013	343,758	346,692	2,934	99%	73,887	4%
12/31/2014	390,400	504,206	113,806	77%	166,220	68%
12/31/2015	419,462	549,750	130,288	76%	206,045	63%
12/31/2016	472,955	657,358	184,403	72%	222,426	83%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Tillamook County Soil And Water Conservation District

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	$184,403	$130,288
Allocated pooled OPSRP UAL	38,293	29,292
Side account	0	0
Net unfunded pension actuarial accrued liability	222,696	159,580
Combined valuation payroll	222,426	206,045
Net pension UAL as a percentage of payroll	100%	77%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($30)	$1,000

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$23,647	$21,830
Tier 1/Tier 2 valuation payroll	182,798	166,972
Tier 1/Tier 2 pension normal cost rate	12.94%	13.07%
Tier 1/ Tier 2 Actuarial accrued liability	$657,358	$549,750
Actuarial asset value	472,955	419,462
Tier 1/Tier 2 Unfunded actuarial accrued liability	184,403	130,288
Tier 1/ Tier 2 Funded status	72%	76%
Combined valuation payroll	$222,426	$206,045
Tier 1/Tier 2 UAL as a percentage of payroll	83%	63%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	5.40%	2.21%
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	3	3
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) **RHIA**	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	222,426	206,045
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$93,532	$88,532
2. Employer reserves	379,423	330,930
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$472,955**	**$419,462**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$419,462
2.	Regular employer contributions	23,401
3.	Benefit payments and expenses	0
4.	Adjustments [1]	(1,772)
5.	Interest credited	31,864
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$472,955**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	10,162	9,960
Tier 2 Police & Fire	0	0
Tier 2 General Service	13,485	11,870
Total	**$23,647**	**$21,830**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$23,528	$23,647	$119

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	69,655	50,978
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	505,818	420,958
▪ **Total Active Members**	**$575,473**	**$471,936**
Dormant Members	81,885	77,814
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$657,358**	**$549,750**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$649,294	$657,358	$8,064

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$657,358	$549,750
2. Actuarial value of assets	472,955	419,462
3. Unfunded accrued liability *(1. – 2.)*	184,403	130,288
4. Funded percentage *(2. ÷ 1.)*	72%	76%
5. Combined valuation payroll	$222,426	$206,045
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	83%	63%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$2,933	$228	$211	$2,916	$231
December 31, 2015	$127,355	$9,215	$9,183	$127,323	$9,317
December 31, 2016	N/A	N/A	N/A	$54,164	$3,824
Total				**$184,403**	**$13,372**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$549,750
b. Normal cost at December 31, 2015 (excluding assumed expenses)	20,819
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	42,012
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	612,581
f. Change in actuarial accrued liability due to assumption, method, and plan changes	8,064
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	620,645
2. Actuarial accrued liability at December 31, 2016	657,358
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(36,713)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	419,462
b. Contributions for 2016[1]	23,401
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	32,337
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	475,200
5. Actuarial value of assets at December 31, 2016	472,955
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(2,245)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($38,958)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$130,288**
2. Expected increase	7,093
3. Liability (gain)/loss	36,713
4. Asset (gain)/loss	2,245
5. Change due to changes in assumptions, methods, and plan provisions	8,064
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$184,403**

1 *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	10,162	57,876	17.56%	9,960	55,905	17.82%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	13,485	124,922	10.79%	11,870	111,067	10.69%
Total	**$23,647**	**$182,798**	**12.94%**	**$21,830**	**$166,972**	**13.07%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$184,403	$130,288
2. Next year's Tier 1/Tier 2 UAL payment	13,372	9,443
3. Combined valuation payroll	222,426	206,045
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	6.01%	4.58%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.94%	13.07%
b. Tier 1/Tier 2 UAL rate	6.01%	4.58%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	19.09%	17.80%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	15.28%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	15.28%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.06%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.06%
c. Funded percentage	72%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.06%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	12.22%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	18.34%
7. Advisory July 1, 2019 total pension rate, before adjustment	19.09%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.75%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	6.01%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	5.26%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	18.34%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	12.94%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	12.94%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	18.34%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.94%	13.07%
b. Tier 1/Tier 2 UAL rate	5.26%	2.06%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	18.34%	15.28%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$57,876	$0	$57,876
Tier 2	124,922	0	124,922
Tier 1/Tier 2 valuation payroll	182,798	0	182,798
OPSRP valuation payroll	39,628	0	39,628
Combined valuation payroll	**$222,426**	**$0**	**$222,426**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	2	1	4	1	2	1	4
Police & Fire	0	0	0	0	0	0	0	0
Total	1	2	1	4	1	2	1	4
Active Members with previous service segments with the employer								
General Service	0	1	N/A	1	0	1	N/A	1
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	1	N/A	1	0	1	N/A	1
Dormant Members								
General Service	0	3	0	3	0	3	0	3
Police & Fire	0	0	0	0	0	0	0	0
Total	0	3	0	3	0	3	0	3
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**1**	**6**	**1**	**8**	**1**	**6**	**1**	**8**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59					2					**2**
60-64										
65-69					1					**1**
70-74										
75+										
Total	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**3**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	10
50-54	1	459
55-59		
60-64	1	218
65-69		
70-74		
75+		
Total	3	229

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Tillamook Fire District/2783
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Tillamook Fire District/2783

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Tillamook Fire District -- #2783

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Tillamook Fire District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Tillamook Fire District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Tillamook Fire District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.11%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(2.10%)	(2.10%)	(2.10%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**20.57%**	**7.95%**	**12.68%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**21.06%**	**8.37%**	**13.10%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 93%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	15.84%	15.84%
Minimum 2019-2021 Rate	12.67%	9.50%
Maximum 2019-2021 Rate	19.01%	22.18%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$755,393	$729,306	($26,087)	104%	$265,563	(10%)
12/31/2012	863,045	819,757	(43,288)	105%	273,216	(16%)
12/31/2013	993,298	880,246	(113,052)	113%	279,546	(40%)
12/31/2014	1,059,115	1,076,206	17,091	98%	287,394	6%
12/31/2015	1,086,488	1,150,218	63,730	94%	291,168	22%
12/31/2016	1,170,650	1,256,399	85,749	93%	291,815	29%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Tillamook Fire District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$85,749	$63,730
Allocated pooled OPSRP UAL	50,240	41,394
Side account	0	0
Net unfunded pension actuarial accrued liability	135,989	105,124
Combined valuation payroll	291,815	291,168
Net pension UAL as a percentage of payroll	47%	36%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($40)	$1,414

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$48,094	$45,438
Tier 1/Tier 2 valuation payroll	227,875	228,490
Tier 1/Tier 2 pension normal cost rate	21.11%	19.89%
Tier 1/ Tier 2 Actuarial accrued liability	$1,256,399	$1,150,218
Actuarial asset value	1,170,650	1,086,488
Tier 1/Tier 2 Unfunded actuarial accrued liability	85,749	63,730
Tier 1/ Tier 2 Funded status	93%	94%
Combined valuation payroll	$291,815	$291,168
Tier 1/Tier 2 UAL as a percentage of payroll	29%	22%
Tier 1/Tier 2 UAL rate	(2.10%)	(4.05%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	5	5

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	291,815	291,168
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$96,895	$91,826
2. Employer reserves	928,506	840,756
3. Benefits in force reserve	145,249	153,906
4. Total market value of assets *(1. + 2. + 3.)*	**$1,170,650**	**$1,086,488**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$1,086,488
2.	Regular employer contributions	26,092
3.	Benefit payments and expenses	(28,439)
4.	Adjustments [1]	7,950
5.	Interest credited	78,559
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,170,650**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$21,908	$20,423
Tier 1 General Service	0	0
Tier 2 Police & Fire	26,186	25,015
Tier 2 General Service	0	0
Total	**$48,094**	**$45,438**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$46,208	$48,094	$1,886

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$491,186	$446,529
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	422,185	371,376
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$913,371**	**$817,905**
Dormant Members	0	0
Retired Members and Beneficiaries	343,028	332,313
Total Actuarial Accrued Liability	**$1,256,399**	**$1,150,218**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,216,978	$1,256,399	$39,421

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,256,399	$1,150,218
2. Actuarial value of assets	1,170,650	1,086,488
3. Unfunded accrued liability *(1. – 2.)*	85,749	63,730
4. Funded percentage *(2. ÷ 1.)*	93%	94%
5. Combined valuation payroll	$291,815	$291,168
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	29%	22%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($112,965)	($8,784)	($8,121)	($112,302)	($8,900)
December 31, 2015	$176,695	$12,785	$12,741	$176,651	$12,926
December 31, 2016	N/A	N/A	N/A	$21,400	$1,511
Total				**$85,749**	**$5,537**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,150,218
b. Normal cost at December 31, 2015 (excluding assumed expenses)	43,336
c. Benefit payments during 2016	(28,200)
d. Interest at 7.50% to December 31, 2016	86,834
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,252,188
f. Change in actuarial accrued liability due to assumption, method, and plan changes	39,421
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,291,609
2. Actuarial accrued liability at December 31, 2016	1,256,399
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	35,210
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,086,488
b. Contributions for 2016[1]	26,092
c. Benefit payments and expenses during 2016	(28,439)
d. Interest at 7.50% to December 31, 2016	81,399
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,165,539
5. Actuarial value of assets at December 31, 2016	1,170,650
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	5,111
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$40,321**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$63,730**
2. Expected increase	22,919
3. Liability (gain)/loss	(35,210)
4. Asset (gain)/loss	(5,111)
5. Change due to changes in assumptions, methods, and plan provisions	39,421
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$85,749**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$21,908	$89,449	24.49%	$20,423	$89,698	22.77%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	26,186	138,426	18.92%	25,015	138,792	18.02%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$48,094**	**$227,875**	**21.11%**	**$45,438**	**$228,490**	**19.89%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$85,749	$63,730
2. Next year's Tier 1/Tier 2 UAL payment	5,537	4,001
3. Combined valuation payroll	291,815	291,168
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	1.90%	1.37%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.11%	19.89%
b. Tier 1/Tier 2 UAL rate	1.90%	1.37%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	23.15%	21.41%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	15.84%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	15.84%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.17%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.17%
c. Funded percentage	93%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.17%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	12.67%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	19.01%
7. Advisory July 1, 2019 total pension rate, before adjustment	23.15%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(4.14%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	1.90%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(2.24%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	19.01%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	21.11%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.11%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	19.01%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.11%	19.89%
b. Tier 1/Tier 2 UAL rate	(2.24%)	(4.20%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	19.01%	15.84%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$89,449	$89,449
Tier 2	0	138,426	138,426
Tier 1/Tier 2 valuation payroll	0	227,875	227,875
OPSRP valuation payroll	0	63,940	63,940
Combined valuation payroll	**$0**	**$291,815**	**$291,815**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	1	2	1	4	1	2	1	4
Total	1	2	1	4	1	2	1	4
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	1	0	0	1	1	0	0	1
Police & Fire	4	0	0	4	3	1	0	4
Total	5	0	0	5	4	1	0	5
Grand Total Number of Members	**6**	**2**	**1**	**9**	**5**	**3**	**1**	**9**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44				1						**1**
45-49			1							**1**
50-54										
55-59										
60-64					1					**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**3**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69	2	588
70-74	3	322
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	5	429

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Town of Butte Falls/2253
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Town of Butte Falls/2253

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Town of Butte Falls -- #2253

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Town of Butte Falls to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Town of Butte Falls.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Town of Butte Falls

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	15.90%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(1.49%)	(1.49%)	(1.49%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**15.97%**	**8.56%**	**13.29%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**16.46%**	**8.98%**	**13.71%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 88%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.41%	11.41%
Minimum 2019-2021 Rate	8.41%	5.41%
Maximum 2019-2021 Rate	14.41%	17.41%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$198,605	$200,004	$1,399	99%	$86,198	2%
12/31/2012	227,332	191,168	(36,164)	119%	55,627	(65%)
12/31/2013	260,079	208,272	(51,807)	125%	74,444	(70%)
12/31/2014	278,186	258,036	(20,150)	108%	65,100	(31%)
12/31/2015	283,012	296,657	13,645	95%	37,997	36%
12/31/2016	283,703	323,036	39,333	88%	46,022	85%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Town of Butte Falls

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$39,333	$13,645
Allocated pooled OPSRP UAL	7,923	5,402
Side account	0	0
Net unfunded pension actuarial accrued liability	47,256	19,047
Combined valuation payroll	46,022	37,997
Net pension UAL as a percentage of payroll	103%	50%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($6)	$185

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$878	$1,178
Tier 1/Tier 2 valuation payroll	5,523	7,832
Tier 1/Tier 2 pension normal cost rate	15.90%	15.04%
Tier 1/ Tier 2 Actuarial accrued liability	$323,036	$296,657
Actuarial asset value	283,703	283,012
Tier 1/Tier 2 Unfunded actuarial accrued liability	39,333	13,645
Tier 1/ Tier 2 Funded status	88%	95%
Combined valuation payroll	$46,022	$37,997
Tier 1/Tier 2 UAL as a percentage of payroll	85%	36%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(1.49%)	(3.63%)
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	4	4
Tier 1/Tier 2 retirees and beneficiaries	4	3

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	46,022	37,997
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$56,501	$60,763
2. Employer reserves	195,916	204,927
3. Benefits in force reserve	31,285	17,323
4. Total market value of assets ***(1. + 2. + 3.)***	**$283,703**	**$283,012**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$283,012
2. Regular employer contributions	(3,166)
3. Benefit payments and expenses	(6,125)
4. Adjustments [1]	(9,984)
5. Interest credited	19,965
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$283,703**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$417	$755
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	461	423
Total	**$878**	**$1,178**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$817	$878	$61

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$109,102	$97,092
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	31,694
▪ Tier 2 General Service	2,557	2,034
▪ **Total Active Members**	**$111,659**	**$130,820**
Dormant Members	137,493	128,434
Retired Members and Beneficiaries	73,884	37,403
Total Actuarial Accrued Liability	**$323,036**	**$296,657**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$316,680	$323,036	$6,356

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$323,036	$296,657
2. Actuarial value of assets	283,703	283,012
3. Unfunded accrued liability *(1. – 2.)*	39,333	13,645
4. Funded percentage *(2. ÷ 1.)*	88%	95%
5. Combined valuation payroll	$46,022	$37,997
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	85%	36%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($51,766)	($4,025)	($3,722)	($51,463)	($4,079)
December 31, 2015	$65,411	$4,733	$4,717	$65,395	$4,785
December 31, 2016	N/A	N/A	N/A	$25,401	$1,793
Total				**$39,333**	**$2,499**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$296,657
b. Normal cost at December 31, 2015 (excluding assumed expenses)	1,178
c. Benefit payments during 2016	(6,074)
d. Interest at 7.50% to December 31, 2016	22,066
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	313,827
f. Change in actuarial accrued liability due to assumption, method, and plan changes	6,356
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	320,183
2. Actuarial accrued liability at December 31, 2016	323,036
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(2,853)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	283,012
b. Contributions for 2016[1]	(3,166)
c. Benefit payments and expenses during 2016	(6,125)
d. Interest at 7.50% to December 31, 2016	20,878
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	294,599
5. Actuarial value of assets at December 31, 2016	283,703
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(10,896)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($13,749)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$13,645**
2. Expected increase	5,583
3. Liability (gain)/loss	2,853
4. Asset (gain)/loss	10,896
5. Change due to changes in assumptions, methods, and plan provisions	6,356
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$39,333**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$417	$2,525	16.51%	$755	$4,776	15.81%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	461	2,998	15.38%	423	3,056	13.84%
Total	**$878**	**$5,523**	**15.90%**	**$1,178**	**$7,832**	**15.04%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$39,333	$13,645
2. Next year's Tier 1/Tier 2 UAL payment	2,499	708
3. Combined valuation payroll	46,022	37,997
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	5.43%	1.86%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.90%	15.04%
b. Tier 1/Tier 2 UAL rate	5.43%	1.86%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	21.47%	17.05%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	11.41%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.41%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.28%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	88%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	8.41%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	14.41%
7. Advisory July 1, 2019 total pension rate, before adjustment	21.47%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(7.06%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	5.43%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(1.63%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	14.41%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	15.90%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	15.90%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	14.41%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.90%	15.04%
b. Tier 1/Tier 2 UAL rate	(1.63%)	(3.78%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	14.41%	11.41%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$2,525	$2,525
Tier 2	2,998	0	2,998
Tier 1/Tier 2 valuation payroll	2,998	2,525	5,523
OPSRP valuation payroll	40,499	0	40,499
Combined valuation payroll	**$43,497**	**$2,525**	**$46,022**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	1	1	0	0	1	1
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	1	1
Active Members with previous service segments with the employer								
General Service	0	1	N/A	1	0	1	N/A	1
Police & Fire	2	0	N/A	2	2	1	N/A	3
Total	2	1	N/A	3	2	2	N/A	4
Dormant Members								
General Service	0	0	1	1	0	0	1	1
Police & Fire	1	3	0	4	1	3	0	4
Total	1	3	1	5	1	3	1	5
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	2	2	0	4	2	1	0	3
Total	2	2	0	4	2	1	0	3
Grand Total Number of Members	**5**	**6**	**2**	**13**	**5**	**6**	**2**	**13**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	2	188
50-54	1	0
55-59		
60-64	1	588
65-69		
70-74		
75+		
Total	4	241

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	96
65-69	1	162
70-74	1	92
75-79		
80-84		
85-89	1	120
90-94		
95-99		
100+		
Total	4	118

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Tri-County Cooperative Weed Management Area/2865
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Tri-County Cooperative Weed Management Area/2865

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Tri-County Cooperative Weed Management Area -- #2865

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Tri-County Cooperative Weed Management Area to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Tri-County Cooperative Weed Management Area.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Tri-County Cooperative Weed Management Area

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.95%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	0.52%	0.52%	0.52%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**19.03%**	**10.57%**	**15.30%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**19.52%**	**10.99%**	**15.72%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 100%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	14.47%	14.47%
Minimum 2019-2021 Rate	11.47%	8.47%
Maximum 2019-2021 Rate	17.47%	20.47%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	($275)	$0	$275	100%	$114,758	0%
12/31/2012	(295)	0	295	0%	96,745	0%
12/31/2013	(1,440)	0	1,440	0%	91,490	2%
12/31/2014	(3,031)	0	3,031	0%	75,233	4%
12/31/2015	(4,528)	0	4,528	0%	70,260	6%
12/31/2016	(8,243)	0	8,243	0%	133,036	6%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Tri-County Cooperative Weed Management Area

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	$8,243	$4,528
Allocated pooled OPSRP UAL	22,904	9,988
Side account	0	0
Net unfunded pension actuarial accrued liability	31,147	14,516
Combined valuation payroll	133,036	70,260
Net pension UAL as a percentage of payroll	23%	21%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($18)	$341

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$0	$0
Tier 1/Tier 2 valuation payroll	0	0
Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
Tier 1/ Tier 2 Actuarial accrued liability	$0	$0
Actuarial asset value	(8,243)	(4,528)
Tier 1/Tier 2 Unfunded actuarial accrued liability	8,243	4,528
Tier 1/ Tier 2 Funded status	0%	0%
Combined valuation payroll	$133,036	$70,260
Tier 1/Tier 2 UAL as a percentage of payroll	6%	6%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	0.52%	(2.24%)
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	133,036	70,260
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	(8,243)	(4,528)
3. Benefits in force reserve	0	0
4. Total market value of assets *(1. + 2. + 3.)*	**($8,243)**	**($4,528)**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	($4,528)
2.	Regular employer contributions	(3,032)
3.	Benefit payments and expenses	0
4.	Adjustments [1]	(151)
5.	Interest credited	(533)
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)***	**($8,243)**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$0**	**$0**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$0**	**$0**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$0**	**$0**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$0	$0
2. Actuarial value of assets	(8,243)	(4,528)
3. Unfunded accrued liability *(1. – 2.)*	8,243	4,528
4. Funded percentage *(2. ÷ 1.)*	100%	100%
5. Combined valuation payroll	$133,036	$70,260
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	6%	6%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$1,439	$112	$103	$1,430	$113
December 31, 2015	$3,089	$224	$223	$3,088	$226
December 31, 2016	N/A	N/A	N/A	$3,725	$263
Total				**$8,243**	**$602**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$0
b. Normal cost at December 31, 2015 (excluding assumed expenses)	0
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	0
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	0
f. Change in actuarial accrued liability due to assumption, method, and plan changes	0
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	0
2. Actuarial accrued liability at December 31, 2016	0
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	0
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	(4,528)
b. Contributions for 2016[1]	(3,032)
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	(453)
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	(8,013)
5. Actuarial value of assets at December 31, 2016	(8,243)
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(231)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($231)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$4,528**
2. Expected increase	3,484
3. Liability (gain)/loss	0
4. Asset (gain)/loss	231
5. Change due to changes in assumptions, methods, and plan provisions	0
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$8,243**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$0**	**$0**	**16.95%**	**$0**	**$0**	**16.71%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$8,243	$4,528
2. Next year's Tier 1/Tier 2 UAL payment	602	336
3. Combined valuation payroll	133,036	70,260
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.45%	0.48%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	0.45%	0.48%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	17.54%	17.34%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	14.47%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	14.47%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.89%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	100%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	11.47%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	17.47%
7. Advisory July 1, 2019 total pension rate, before adjustment	17.54%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.07%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	0.45%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.38%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	17.47%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.95%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.95%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.47%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	0.38%	(2.39%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	17.47%	14.47%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	0	0	0
OPSRP valuation payroll	133,036	0	133,036
Combined valuation payroll	**$133,036**	**$0**	**$133,036**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	4	4	0	0	2	2
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	4	4	0	0	2	2
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	1	1	0	0	1	1
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	1	1
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**0**	**0**	**5**	**5**	**0**	**0**	**3**	**3**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Turner Fire District/2610
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Turner Fire District/2610

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Turner Fire District -- #2610

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Turner Fire District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Turner Fire District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Turner Fire District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	24.98%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(4.02%)	(4.02%)	(4.02%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**22.52%**	**6.03%**	**10.76%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**23.01%**	**6.45%**	**11.18%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 82%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	17.47%	17.47%
Minimum 2019-2021 Rate	13.98%	10.49%
Maximum 2019-2021 Rate	20.96%	24.45%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$0	$0	$0	0%	$0	0%
12/31/2012	1,274,813	1,088,856	(185,957)	117%	336,946	(55%)
12/31/2013	1,424,608	1,184,515	(240,093)	120%	355,304	(68%)
12/31/2014	1,459,477	1,608,804	149,327	91%	327,881	46%
12/31/2015	1,454,911	1,696,372	241,461	86%	495,653	49%
12/31/2016	1,503,403	1,837,121	333,718	82%	591,204	56%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Turner Fire District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$333,718	$241,461
Allocated pooled OPSRP UAL	101,783	70,464
Side account	0	0
Net unfunded pension actuarial accrued liability	435,501	311,925
Combined valuation payroll	591,204	495,653
Net pension UAL as a percentage of payroll	74%	63%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($80)	$2,407

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$23,865	$29,313
Tier 1/Tier 2 valuation payroll	95,554	102,996
Tier 1/Tier 2 pension normal cost rate	24.98%	28.46%
Tier 1/ Tier 2 Actuarial accrued liability	$1,837,121	$1,696,372
Actuarial asset value	1,503,403	1,454,911
Tier 1/Tier 2 Unfunded actuarial accrued liability	333,718	241,461
Tier 1/ Tier 2 Funded status	82%	86%
Combined valuation payroll	$591,204	$495,653
Tier 1/Tier 2 UAL as a percentage of payroll	56%	49%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(4.02%)	(10.99%)
Tier 1/Tier 2 active members [1]	1	2
Tier 1/Tier 2 dormant members	8	7
Tier 1/Tier 2 retirees and beneficiaries	7	5

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	591,204	495,653
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$161,430	$156,751
2. Employer reserves	1,008,557	950,952
3. Benefits in force reserve	333,416	347,208
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,503,403**	**$1,454,911**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$1,454,911
2. Regular employer contributions	(2,472)
3. Benefit payments and expenses	(65,281)
4. Adjustments [1]	14,603
5. Interest credited	101,643
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,503,403**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$23,280	$28,441
Tier 1 General Service	0	0
Tier 2 Police & Fire	585	872
Tier 2 General Service	0	0
Total	**$23,865**	**$29,313**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$23,002	$23,865	$863

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$816,521	$724,395
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	123,685	124,061
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$940,206**	**$848,456**
Dormant Members	109,502	98,227
Retired Members and Beneficiaries	787,413	749,689
Total Actuarial Accrued Liability	**$1,837,121**	**$1,696,372**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,774,763	$1,837,121	$62,358

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,837,121	$1,696,372
2. Actuarial value of assets	1,503,403	1,454,911
3. Unfunded accrued liability *(1. – 2.)*	333,718	241,461
4. Funded percentage *(2. ÷ 1.)*	82%	86%
5. Combined valuation payroll	$591,204	$495,653
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	56%	49%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($239,907)	($18,654)	($17,248)	($238,501)	($18,902)
December 31, 2015	$481,368	$34,831	$34,711	$481,248	$35,215
December 31, 2016	N/A	N/A	N/A	$90,971	$6,423
Total				**$333,718**	**$22,736**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,696,372
b. Normal cost at December 31, 2015 (excluding assumed expenses)	27,997
c. Benefit payments during 2016	(64,732)
d. Interest at 7.50% to December 31, 2016	125,850
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,785,487
f. Change in actuarial accrued liability due to assumption, method, and plan changes	62,358
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,847,845
2. Actuarial accrued liability at December 31, 2016	1,837,121
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	10,724
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,454,911
b. Contributions for 2016[1]	(2,472)
c. Benefit payments and expenses during 2016	(65,281)
d. Interest at 7.50% to December 31, 2016	106,578
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,493,735
5. Actuarial value of assets at December 31, 2016	1,503,403
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	9,668
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$20,392**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$241,461**
2. Expected increase	50,291
3. Liability (gain)/loss	(10,724)
4. Asset (gain)/loss	(9,668)
5. Change due to changes in assumptions, methods, and plan provisions	62,358
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$333,718**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$23,280	$92,364	25.20%	$28,441	$98,260	28.94%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	585	3,190	18.34%	872	4,736	18.41%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$23,865**	**$95,554**	**24.98%**	**$29,313**	**$102,996**	**28.46%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$333,718	$241,461
2. Next year's Tier 1/Tier 2 UAL payment	22,736	16,177
3. Combined valuation payroll	591,204	495,653
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	3.85%	3.26%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	24.98%	28.46%
b. Tier 1/Tier 2 UAL rate	3.85%	3.26%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	28.97%	31.87%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	17.47%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	17.47%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.49%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.49%
c. Funded percentage	82%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.49%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.98%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	20.96%
7. Advisory July 1, 2019 total pension rate, before adjustment	28.97%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(8.01%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	3.85%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(4.16%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	20.96%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	24.98%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	24.98%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	20.96%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	24.98%	28.46%
b. Tier 1/Tier 2 UAL rate	(4.16%)	(11.14%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	20.96%	17.47%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$92,364	$92,364
Tier 2	0	3,190	3,190
Tier 1/Tier 2 valuation payroll	0	95,554	95,554
OPSRP valuation payroll	18,872	476,778	495,650
Combined valuation payroll	**$18,872**	**$572,332**	**$591,204**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	1	0	17	18	2	0	17	19
Total	1	0	17	18	2	0	17	19
Active Members with previous service segments with the employer								
General Service	1	0	N/A	1	1	0	N/A	1
Police & Fire	6	17	N/A	23	7	16	N/A	23
Total	7	17	N/A	24	8	16	N/A	24
Dormant Members								
General Service	0	1	0	1	0	1	0	1
Police & Fire	1	6	2	9	0	6	2	8
Total	1	7	2	10	0	7	2	9
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	6	1	0	7	5	0	0	5
Total	6	1	0	7	5	0	0	5
Grand Total Number of Members	**15**	**25**	**19**	**59**	**15**	**23**	**19**	**57**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54						1				**1**
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	1	394
40-44	1	137
45-49	1	210
50-54	3	13
55-59	1	354
60-64		
65-69	1	1,076
70-74		
75+		
Total	8	276

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	3	22
55-59		
60-64	3	311
65-69		
70-74	1	3,422
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	7	632

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Umatilla County Fire District #1/2887
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Umatilla County Fire District #1/2887

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Umatilla County Fire District #1 -- #2887

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Umatilla County Fire District #1 to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Umatilla County Fire District #1.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Umatilla County Fire District #1

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	20.23%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	8.06%	8.06%	8.06%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**29.85%**	**18.11%**	**22.84%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**30.34%**	**18.53%**	**23.26%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 66%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	N/A	N/A
Minimum 2019-2021 Rate	N/A	N/A
Maximum 2019-2021 Rate	N/A	N/A

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$0	$0	$0	0%	$0	0%
12/31/2012	0	0	0	0%	0	0%
12/31/2013	0	0	0	0%	0	0%
12/31/2014	0	0	0	0%	0	0%
12/31/2015	0	0	0	0%	0	0%
12/31/2016	6,233,145	9,410,763	3,177,618	66%	2,832,566	112%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Umatilla County Fire District #1

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$3,177,618	$0
Allocated pooled OPSRP UAL	487,661	0
Side account	0	0
Net unfunded pension actuarial accrued liability	3,665,279	0
Combined valuation payroll	2,832,566	0
Net pension UAL as a percentage of payroll	129%	0%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($386)	$0

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$286,855	$0
Tier 1/Tier 2 valuation payroll	1,418,311	0
Tier 1/Tier 2 pension normal cost rate	20.23%	0.00%
Tier 1/ Tier 2 Actuarial accrued liability	$9,410,763	$0
Actuarial asset value	6,233,145	0
Tier 1/Tier 2 Unfunded actuarial accrued liability	3,177,618	0
Tier 1/ Tier 2 Funded status	66%	0%
Combined valuation payroll	$2,832,566	$0
Tier 1/Tier 2 UAL as a percentage of payroll	112%	0%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	8.06%	0.00%
Tier 1/Tier 2 active members [1]	15	0
Tier 1/Tier 2 dormant members	3	0
Tier 1/Tier 2 retirees and beneficiaries	11	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	2,832,566	0
3. Average Amortization factor	8.994	0.000
4. Total side account rate ***(-1. ÷ 2. ÷ 3.)*** [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$650,152	$0
2. Employer reserves	4,520,503	0
3. Benefits in force reserve	1,062,490	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$6,233,145**	**$0**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$0
2.	Regular employer contributions	233,516
3.	Benefit payments and expenses	(208,030)
4.	Adjustments [1]	5,788,047
5.	Interest credited	419,612
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$6,233,145**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$84,245	$0
Tier 1 General Service	13,096	0
Tier 2 Police & Fire	189,514	0
Tier 2 General Service	0	0
Total	**$286,855**	**$0**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$276,966	$286,855	$9,889

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$3,066,677	$0
▪ Tier 1 General Service	255,014	0
▪ Tier 2 Police & Fire	3,502,631	0
▪ Tier 2 General Service	37,746	0
▪ **Total Active Members**	**$6,862,068**	**$0**
Dormant Members	39,465	0
Retired Members and Beneficiaries	2,509,230	0
Total Actuarial Accrued Liability	**$9,410,763**	**$0**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$9,094,215	$9,410,763	$316,548

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$9,410,763	$0
2. Actuarial value of assets	6,233,145	0
3. Unfunded accrued liability *(1. – 2.)*	3,177,618	0
4. Funded percentage *(2. ÷ 1.)*	66%	0%
5. Combined valuation payroll	$2,832,566	$0
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	112%	0%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2016	N/A	N/A	N/A	$3,177,618	$224,361
Total				**$3,177,618**	**$224,361**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$0
b. Normal cost at December 31, 2015 (excluding assumed expenses)	0
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	0
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	0
f. Change in actuarial accrued liability due to assumption, method, and plan changes	316,548
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	316,548
2. Actuarial accrued liability at December 31, 2016	9,410,763
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(9,094,215)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	0
b. Contributions for 2016[1]	233,516
c. Benefit payments and expenses during 2016	(208,030)
d. Interest at 7.50% to December 31, 2016	956
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	26,442
5. Actuarial value of assets at December 31, 2016	6,233,145
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	6,206,703
7. Total actuarial gain/(loss) *(3. + 6.)*	**($2,887,512)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$0**
2. Expected increase	(26,442)
3. Liability (gain)/loss	9,094,215
4. Asset (gain)/loss	(6,206,703)
5. Change due to changes in assumptions, methods, and plan provisions	316,548
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$3,177,618**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$84,245	$407,798	20.66%	$0	$0	0.00%
Tier 1 General Service	13,096	70,519	18.57%	0	0	0.00%
Tier 2 Police & Fire	189,514	939,994	20.16%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$286,855**	**$1,418,311**	**20.23%**	**$0**	**$0**	**0.00%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$3,177,618	$0
2. Next year's Tier 1/Tier 2 UAL payment	224,361	0
3. Combined valuation payroll	2,832,566	0
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	7.92%	0.00%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	20.23%	16.71%
b. Tier 1/Tier 2 UAL rate	7.92%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	28.29%	16.86%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	28.29%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	28.29%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	N/A
b. Preliminary size of rate collar *(maximum of 3% or a.)*	N/A
c. Funded percentage	N/A
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	N/A
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	N/A
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	N/A
7. Advisory July 1, 2019 total pension rate, before adjustment	N/A
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	N/A
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	N/A
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	N/A
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	N/A
12. Tier 1/Tier 2 retiree healthcare rate	N/A
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	N/A
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	N/A
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	N/A
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	N/A

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	20.23%	16.71%
b. Tier 1/Tier 2 UAL rate	7.92%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	28.29%	16.86%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$70,519	$407,798	$478,317
Tier 2	0	939,994	939,994
Tier 1/Tier 2 valuation payroll	70,519	1,347,792	1,418,311
OPSRP valuation payroll	54,695	1,359,560	1,414,255
Combined valuation payroll	**$125,214**	**$2,707,352**	**$2,832,566**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	1	2	0	0	0	0
Police & Fire	4	10	19	33	0	0	0	0
Total	5	10	20	35	0	0	0	0
Active Members with previous service segments with the employer								
General Service	1	4	N/A	5	0	0	N/A	0
Police & Fire	2	9	N/A	11	0	0	N/A	0
Total	3	13	N/A	16	0	0	N/A	0
Dormant Members								
General Service	0	1	0	1	0	0	0	0
Police & Fire	1	1	0	2	0	0	0	0
Total	1	2	0	3	0	0	0	0
Retired Members and Beneficiaries								
General Service	1	0	0	1	0	0	0	0
Police & Fire	10	0	0	10	0	0	0	0
Total	11	0	0	11	0	0	0	0
Grand Total Number of Members	**20**	**25**	**20**	**65**	**0**	**0**	**0**	**0**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39			2	1						**3**
40-44				1						**1**
45-49			1	2						**3**
50-54				1	2	2				**5**
55-59				1						**1**
60-64			1							**1**
65-69						1				**1**
70-74										
75+										
Total	**0**	**0**	**4**	**6**	**2**	**3**	**0**	**0**	**0**	**15**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	**Count**	**Average Deferred Monthly Benefit**
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	0
45-49	1	167
50-54	1	166
55-59		
60-64		
65-69		
70-74		
75+		
Total	3	111

Retired Members and Beneficiaries

Age	**Count**	**Average Monthly Benefit**
<45		
45-49		
50-54	2	2,632
55-59	1	507
60-64	4	1,048
65-69	2	1,498
70-74	1	1
75-79	1	458
80-84		
85-89		
90-94		
95-99		
100+		
Total	11	1,219

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Umatilla-Morrow Radio and Data District/2874
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Umatilla-Morrow Radio and Data District/2874

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Umatilla-Morrow Radio and Data District -- #2874

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Umatilla-Morrow Radio and Data District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Umatilla-Morrow Radio and Data District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Umatilla-Morrow Radio and Data District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	10.91%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	1.06%	1.06%	1.06%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**13.53%**	**11.11%**	**15.84%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**14.02%**	**11.53%**	**16.26%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 75%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	10.72%	10.72%
Minimum 2019-2021 Rate	7.72%	4.72%
Maximum 2019-2021 Rate	13.72%	16.72%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$0	$493	$493	0%	$64,245	1%
12/31/2012	18,250	10,753	(7,497)	170%	125,894	(6%)
12/31/2013	36,329	22,118	(14,211)	164%	128,162	(11%)
12/31/2014	48,000	46,421	(1,579)	103%	205,709	(1%)
12/31/2015	61,232	70,322	9,090	87%	202,445	4%
12/31/2016	83,176	110,850	27,674	75%	205,471	13%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Umatilla-Morrow Radio and Data District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$27,674	$9,090
Allocated pooled OPSRP UAL	35,374	28,780
Side account	0	0
Net unfunded pension actuarial accrued liability	63,048	37,870
Combined valuation payroll	205,471	202,445
Net pension UAL as a percentage of payroll	31%	19%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($28)	$983

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$22,419	$21,365
Tier 1/Tier 2 valuation payroll	205,471	202,445
Tier 1/Tier 2 pension normal cost rate	10.91%	10.55%
Tier 1/ Tier 2 Actuarial accrued liability	$110,850	$70,322
Actuarial asset value	83,176	61,232
Tier 1/Tier 2 Unfunded actuarial accrued liability	27,674	9,090
Tier 1/ Tier 2 Funded status	75%	87%
Combined valuation payroll	$205,471	$202,445
Tier 1/Tier 2 UAL as a percentage of payroll	13%	4%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	1.06%	0.17%
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	205,471	202,445
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	83,176	61,232
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$83,176**	**$61,232**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$61,232
2. Regular employer contributions	16,613
3. Benefit payments and expenses	0
4. Adjustments [1]	(245)
5. Interest credited	5,575
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$83,176**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	22,419	21,365
Total	**$22,419**	**$21,365**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$21,926	$22,419	$493

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	110,850	70,322
▪ **Total Active Members**	**$110,850**	**$70,322**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$110,850**	**$70,322**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$96,269	$110,850	$14,581

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$110,850	$70,322
2. Actuarial value of assets	83,176	61,232
3. Unfunded accrued liability *(1. – 2.)*	27,674	9,090
4. Funded percentage *(2. ÷ 1.)*	75%	87%
5. Combined valuation payroll	$205,471	$202,445
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	13%	4%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($14,199)	($1,104)	($1,021)	($14,116)	($1,119)
December 31, 2015	$23,289	$1,685	$1,679	$23,283	$1,704
December 31, 2016	N/A	N/A	N/A	$18,507	$1,307
Total				**$27,674**	**$1,892**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$70,322
b. Normal cost at December 31, 2015 (excluding assumed expenses)	20,376
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	6,038
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	96,736
f. Change in actuarial accrued liability due to assumption, method, and plan changes	14,581
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	111,317
2. Actuarial accrued liability at December 31, 2016	110,850
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	467
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	61,232
b. Contributions for 2016[1]	16,613
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	5,215
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	83,061
5. Actuarial value of assets at December 31, 2016	83,176
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	115
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$582**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$9,090**
2. Expected increase	4,585
3. Liability (gain)/loss	(467)
4. Asset (gain)/loss	(115)
5. Change due to changes in assumptions, methods, and plan provisions	14,581
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$27,674**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	22,419	205,471	10.91%	21,365	202,445	10.55%
Total	**$22,419**	**$205,471**	**10.91%**	**$21,365**	**$202,445**	**10.55%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$27,674	$9,090
2. Next year's Tier 1/Tier 2 UAL payment	1,892	581
3. Combined valuation payroll	205,471	202,445
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.92%	0.29%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	10.91%	10.55%
b. Tier 1/Tier 2 UAL rate	0.92%	0.29%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	11.97%	10.99%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	10.72%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	10.72%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.14%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	75%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	7.72%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	13.72%
7. Advisory July 1, 2019 total pension rate, before adjustment	11.97%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	0.92%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.92%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	11.97%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	10.91%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	10.91%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	11.97%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	10.91%	10.55%
b. Tier 1/Tier 2 UAL rate	0.92%	0.02%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	11.97%	10.72%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	205,471	0	205,471
Tier 1/Tier 2 valuation payroll	205,471	0	205,471
OPSRP valuation payroll	0	0	0
Combined valuation payroll	**$205,471**	**$0**	**$205,471**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	3	0	3	0	3	0	3
Police & Fire	0	0	0	0	0	0	0	0
Total	0	3	0	3	0	3	0	3
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**0**	**3**	**0**	**3**	**0**	**3**	**0**	**3**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39				1						1
40-44			1							1
45-49										
50-54				1						1
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	1	2	0	0	0	0	0	3

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Valley View Cemetery/2536
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

Milliman

November 2017
Valley View Cemetery/2536

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Valley View Cemetery/2536

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Valley View Cemetery -- #2536

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Valley View Cemetery to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Valley View Cemetery.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Valley View Cemetery

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.74%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(16.23%)	(16.23%)	(16.23%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**7.07%**	**0.00%**	**0.00%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**7.56%**	**0.42%**	**0.42%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 957%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	5.50%	5.50%
Minimum 2019-2021 Rate	2.50%	0.00%
Maximum 2019-2021 Rate	8.50%	11.50%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$88,943	$9,444	($79,499)	942%	$39,559	(201%)
12/31/2012	101,364	7,927	(93,437)	1279%	33,825	(276%)
12/31/2013	116,935	8,598	(108,337)	1360%	38,133	(284%)
12/31/2014	125,081	10,818	(114,263)	1156%	43,622	(262%)
12/31/2015	125,579	11,343	(114,236)	1107%	45,911	(249%)
12/31/2016	130,231	13,608	(116,623)	957%	54,572	(214%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Valley View Cemetery

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
T1/T2 UAL	($116,623)	($114,236)
Allocated pooled OPSRP UAL	9,395	6,527
Side account	0	0
Net unfunded pension actuarial accrued liability	(107,228)	(107,709)
Combined valuation payroll	54,572	45,911
Net pension UAL as a percentage of payroll	(196%)	(235%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($7)	$223

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$1,245	$1,103
Tier 1/Tier 2 valuation payroll	7,673	6,856
Tier 1/Tier 2 pension normal cost rate	21.74%	21.59%
Tier 1/ Tier 2 Actuarial accrued liability	$13,608	$11,343
Actuarial asset value	130,231	125,579
Tier 1/Tier 2 Unfunded actuarial accrued liability	(116,623)	(114,236)
Tier 1/ Tier 2 Funded status	957%	1107%
Combined valuation payroll	$54,572	$45,911
Tier 1/Tier 2 UAL as a percentage of payroll	(214%)	(249%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(16.23%)	(16.09%)
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	1	1

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	54,572	45,911
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	127,104	122,254
3. Benefits in force reserve	3,127	3,325
4. Total market value of assets ***(1. + 2. + 3.)***	**$130,231**	**$125,579**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$125,579
2.	Regular employer contributions	(3,555)
3.	Benefit payments and expenses	(612)
4.	Adjustments [1]	133
5.	Interest credited	8,686
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$130,231**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	1,245	1,103
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$1,245**	**$1,103**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$1,246	$1,245	($1)

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	6,223	4,163
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$6,223**	**$4,163**
Dormant Members	0	0
Retired Members and Beneficiaries	7,385	7,180
Total Actuarial Accrued Liability	**$13,608**	**$11,343**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$12,468	$13,608	$1,140

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$13,608	$11,343
2. Actuarial value of assets	130,231	125,579
3. Unfunded accrued liability *(1. – 2.)*	(116,623)	(114,236)
4. Funded percentage *(2. ÷ 1.)*	957%	1107%
5. Combined valuation payroll	$54,572	$45,911
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(214%)	(249%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($108,254)	($8,417)	($7,783)	($107,620)	($8,529)
December 31, 2015	($5,982)	($433)	($431)	($5,980)	($438)
December 31, 2016	N/A	N/A	N/A	($3,023)	($213)
Total				**($116,623)**	**($9,180)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$11,343
b. Normal cost at December 31, 2015 (excluding assumed expenses)	1,103
c. Benefit payments during 2016	(607)
d. Interest at 7.50% to December 31, 2016	869
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	12,708
f. Change in actuarial accrued liability due to assumption, method, and plan changes	1,140
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	13,848
2. Actuarial accrued liability at December 31, 2016	13,608
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	240
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	125,579
b. Contributions for 2016[1]	(3,555)
c. Benefit payments and expenses during 2016	(612)
d. Interest at 7.50% to December 31, 2016	9,262
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	130,674
5. Actuarial value of assets at December 31, 2016	130,231
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(443)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($203)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($114,236)**
2. Expected increase	(3,730)
3. Liability (gain)/loss	(240)
4. Asset (gain)/loss	443
5. Change due to changes in assumptions, methods, and plan provisions	1,140
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**($116,623)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	1,245	7,673	16.23%	1,103	6,856	16.09%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$1,245**	**$7,673**	**16.23%**	**$1,103**	**$6,856**	**16.09%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($116,623)	($114,236)
2. Next year's Tier 1/Tier 2 UAL payment	(9,180)	(8,850)
3. Combined valuation payroll	54,572	45,911
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(16.82%)	(19.28%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.23%	16.09%
b. Tier 1/Tier 2 UAL rate	(16.82%)	(19.28%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	(0.45%)	(3.04%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	5.50%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	5.50%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.10%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	957%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	0.00%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	11.50%
7. Advisory July 1, 2019 total pension rate, before adjustment	(0.45%)
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.45%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(16.82%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(16.37%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	0.00%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	5.51%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.23%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.74%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	5.51%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.74%	21.59%
b. Tier 1/Tier 2 UAL rate	(16.37%)	(16.24%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	5.51%	5.50%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$7,673	$0	$7,673
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	7,673	0	7,673
OPSRP valuation payroll	46,899	0	46,899
Combined valuation payroll	**$54,572**	**$0**	**$54,572**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	2	2	0	0	2	2
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	2	2	0	0	2	2
Active Members with previous service segments with the employer								
General Service	1	0	N/A	1	1	0	N/A	1
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	0	N/A	1	1	0	N/A	1
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	1	0	0	1	1	0	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	0	1	1	0	0	1
Grand Total Number of Members	**2**	**0**	**2**	**4**	**2**	**0**	**2**	**4**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84	1	50
85-89		
90-94		
95-99		
100+		
Total	1	50

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	\$6.5 million added to OPSRP normal cost. \$37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Vernonia Fire/2797
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

Milliman

November 2017
Vernonia Fire/2797

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
Vernonia Fire/2797

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Vernonia Fire -- #2797

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Vernonia Fire to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Vernonia Fire.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Vernonia Fire

	Payroll		
		OPSRP	
	Tier 1/Tier 2	**General Service**	**Police & Fire**
Pension			
Normal cost rate	11.30%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(0.26%)	(0.26%)	(0.26%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**12.60%**	**9.79%**	**14.52%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**13.09%**	**10.21%**	**14.94%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 101%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	8.47%	8.47%
Minimum 2019-2021 Rate	5.47%	2.47%
Maximum 2019-2021 Rate	11.47%	14.47%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$202,377	$193,402	($8,975)	105%	$95,536	(9%)
12/31/2012	222,028	192,073	(29,955)	116%	68,647	(44%)
12/31/2013	246,059	200,102	(45,957)	123%	76,009	(60%)
12/31/2014	253,297	232,832	(20,465)	109%	80,963	(25%)
12/31/2015	251,140	245,454	(5,686)	102%	81,364	(7%)
12/31/2016	255,516	253,639	(1,877)	101%	106,826	(2%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Vernonia Fire

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($1,877)	($5,686)
Allocated pooled OPSRP UAL	18,391	11,567
Side account	0	0
Net unfunded pension actuarial accrued liability	16,514	5,881
Combined valuation payroll	106,826	81,364
Net pension UAL as a percentage of payroll	15%	7%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($15)	$395

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$2,377	$2,332
Tier 1/Tier 2 valuation payroll	21,027	21,547
Tier 1/Tier 2 pension normal cost rate	11.30%	10.82%
Tier 1/ Tier 2 Actuarial accrued liability	$253,639	$245,454
Actuarial asset value	255,516	251,140
Tier 1/Tier 2 Unfunded actuarial accrued liability	(1,877)	(5,686)
Tier 1/ Tier 2 Funded status	101%	102%
Combined valuation payroll	$106,826	$81,364
Tier 1/Tier 2 UAL as a percentage of payroll	(2%)	(7%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(0.26%)	(2.35%)
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	1	1

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	106,826	81,364
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$19,290	$18,282
2. Employer reserves	165,895	156,762
3. Benefits in force reserve	70,332	76,096
4. Total market value of assets ***(1. + 2. + 3.)***	**$255,516**	**$251,140**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$251,140
2.	Regular employer contributions	(1,810)
3.	Benefit payments and expenses	(13,771)
4.	Adjustments [1]	2,724
5.	Interest credited	17,233
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$255,516**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	2,377	2,332
Total	**$2,377**	**$2,332**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$2,311	$2,377	$66

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	42,874	38,897
▪ **Total Active Members**	**$42,874**	**$38,897**
Dormant Members	44,667	42,252
Retired Members and Beneficiaries	166,098	164,305
Total Actuarial Accrued Liability	**$253,639**	**$245,454**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$249,043	$253,639	$4,596

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$253,639	$245,454
2. Actuarial value of assets	255,516	251,140
3. Unfunded accrued liability *(1. – 2.)*	(1,877)	(5,686)
4. Funded percentage *(2. ÷ 1.)*	101%	102%
5. Combined valuation payroll	$106,826	$81,364
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(2%)	(7%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($45,921)	($3,571)	($3,301)	($45,651)	($3,618)
December 31, 2015	$40,235	$2,911	$2,901	$40,225	$2,943
December 31, 2016	N/A	N/A	N/A	$3,549	$251
Total				**($1,877)**	**($424)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$245,454
b. Normal cost at December 31, 2015 (excluding assumed expenses)	2,224
c. Benefit payments during 2016	(13,655)
d. Interest at 7.50% to December 31, 2016	17,980
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	252,003
f. Change in actuarial accrued liability due to assumption, method, and plan changes	4,596
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	256,599
2. Actuarial accrued liability at December 31, 2016	253,639
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	2,960
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	251,140
b. Contributions for 2016[1]	(1,810)
c. Benefit payments and expenses during 2016	(13,771)
d. Interest at 7.50% to December 31, 2016	18,251
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	253,810
5. Actuarial value of assets at December 31, 2016	255,516
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	1,706
7. Total actuarial gain/(loss) *(3. + 6.)*	**$4,666**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($5,686)**
2. Expected increase	3,879
3. Liability (gain)/loss	(2,960)
4. Asset (gain)/loss	(1,706)
5. Change due to changes in assumptions, methods, and plan provisions	4,596
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($1,877)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	2,377	21,027	11.30%	2,332	21,547	10.82%
Total	**$2,377**	**$21,027**	**11.30%**	**$2,332**	**$21,547**	**10.82%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($1,877)	($5,686)
2. Next year's Tier 1/Tier 2 UAL payment	(424)	(660)
3. Combined valuation payroll	106,826	81,364
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(0.40%)	(0.81%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.30%	10.82%
b. Tier 1/Tier 2 UAL rate	(0.40%)	(0.81%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	11.04%	10.16%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	8.47%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	8.47%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.69%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	101%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	5.47%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	11.47%
7. Advisory July 1, 2019 total pension rate, before adjustment	11.04%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(0.40%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(0.40%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	11.04%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.30%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.30%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	11.04%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.30%	10.82%
b. Tier 1/Tier 2 UAL rate	(0.40%)	(2.50%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	11.04%	8.47%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	21,027	0	21,027
Tier 1/Tier 2 valuation payroll	21,027	0	21,027
OPSRP valuation payroll	0	85,799	85,799
Combined valuation payroll	**$21,027**	**$85,799**	**$106,826**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	0	1	0	1	0	1
Police & Fire	0	0	2	2	0	0	1	1
Total	0	1	2	3	0	1	1	2
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	1	0	0	1	1	0	0	1
Total	1	0	0	1	1	0	0	1
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	1	0	1	0	1	0	1
Total	0	1	0	1	0	1	0	1
Grand Total Number of Members	**1**	**2**	**2**	**5**	**1**	**2**	**1**	**4**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49			1							**1**
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59	1	251
60-64		
65-69		
70-74		
75+		
Total	1	251

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	934
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	1	934

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Wallowa County/2050
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Wallowa County/2050

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Wallowa County/2050

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Wallowa County -- #2050

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Wallowa County to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Wallowa County.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Wallowa County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	30.46%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(17.94%)	(17.94%)	(17.94%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**14.08%**	**0.00%**	**0.00%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**14.57%**	**0.42%**	**0.42%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 109%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	9.52%	9.52%
Minimum 2019-2021 Rate	6.52%	3.52%
Maximum 2019-2021 Rate	12.52%	15.52%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,158,734	$1,294,432	$135,698	90%	$283,239	48%
12/31/2012	1,302,300	1,090,558	(211,742)	119%	178,369	(119%)
12/31/2013	1,434,706	1,162,654	(272,052)	123%	267,075	(102%)
12/31/2014	1,464,839	1,340,855	(123,984)	109%	271,075	(46%)
12/31/2015	1,455,430	1,365,970	(89,460)	107%	266,007	(34%)
12/31/2016	1,499,514	1,374,858	(124,656)	109%	282,838	(44%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Wallowa County

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($124,656)	($89,460)
Allocated pooled OPSRP UAL	48,694	37,817
Side account	0	0
Net unfunded pension actuarial accrued liability	(75,962)	(51,643)
Combined valuation payroll	282,838	266,007
Net pension UAL as a percentage of payroll	(27%)	(19%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($39)	$1,292

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$14,488	$16,966
Tier 1/Tier 2 valuation payroll	47,571	88,539
Tier 1/Tier 2 pension normal cost rate	30.46%	19.16%
Tier 1/ Tier 2 Actuarial accrued liability	$1,374,858	$1,365,970
Actuarial asset value	1,499,514	1,455,430
Tier 1/Tier 2 Unfunded actuarial accrued liability	(124,656)	(89,460)
Tier 1/ Tier 2 Funded status	109%	107%
Combined valuation payroll	$282,838	$266,007
Tier 1/Tier 2 UAL as a percentage of payroll	(44%)	(34%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(17.94%)	(9.64%)
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	3	3
Tier 1/Tier 2 retirees and beneficiaries	8	8

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	282,838	266,007
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$137,440	$130,708
2. Employer reserves	1,052,529	997,119
3. Benefits in force reserve	309,545	327,602
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,499,514**	**$1,455,430**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$1,455,430
2. Regular employer contributions	(14,441)
3. Benefit payments and expenses	(60,607)
4. Adjustments [1]	18,300
5. Interest credited	100,832
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,499,514**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	14,488	16,966
Tier 2 General Service	0	0
Total	**$14,488**	**$16,966**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$13,654	$14,488	$834

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	252,468	291,637
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$252,468**	**$291,637**
Dormant Members	391,355	366,978
Retired Members and Beneficiaries	731,035	707,355
Total Actuarial Accrued Liability	**$1,374,858**	**$1,365,970**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,335,856	$1,374,858	$39,002

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,374,858	$1,365,970
2. Actuarial value of assets	1,499,514	1,455,430
3. Unfunded accrued liability *(1. – 2.)*	(124,656)	(89,460)
4. Funded percentage *(2. ÷ 1.)*	109%	107%
5. Combined valuation payroll	$282,838	$266,007
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(44%)	(34%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($271,843)	($21,137)	($19,544)	($270,250)	($21,418)
December 31, 2015	$182,383	$13,197	$13,151	$182,337	$13,342
December 31, 2016	N/A	N/A	N/A	($36,743)	($2,594)
Total				**($124,656)**	**($10,670)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,365,970
b. Normal cost at December 31, 2015 (excluding assumed expenses)	16,177
c. Benefit payments during 2016	(60,098)
d. Interest at 7.50% to December 31, 2016	100,801
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,422,850
f. Change in actuarial accrued liability due to assumption, method, and plan changes	39,002
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,461,852
2. Actuarial accrued liability at December 31, 2016	1,374,858
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	86,994
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,455,430
b. Contributions for 2016[1]	(14,441)
c. Benefit payments and expenses during 2016	(60,607)
d. Interest at 7.50% to December 31, 2016	106,343
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,486,724
5. Actuarial value of assets at December 31, 2016	1,499,514
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	12,789
7. Total actuarial gain/(loss) *(3. + 6.)*	**$99,783**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($89,460)**
2. Expected increase	25,585
3. Liability (gain)/loss	(86,994)
4. Asset (gain)/loss	(12,789)
5. Change due to changes in assumptions, methods, and plan provisions	39,002
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($124,656)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	14,488	47,571	30.46%	16,966	88,539	19.16%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$14,488**	**$47,571**	**30.46%**	**$16,966**	**$88,539**	**19.16%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($124,656)	($89,460)
2. Next year's Tier 1/Tier 2 UAL payment	(10,670)	(7,940)
3. Combined valuation payroll	282,838	266,007
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(3.77%)	(2.98%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	30.46%	19.16%
b. Tier 1/Tier 2 UAL rate	(3.77%)	(2.98%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	26.83%	16.33%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	9.52%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	9.52%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	1.90%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	109%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	6.52%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	12.52%
7. Advisory July 1, 2019 total pension rate, before adjustment	26.83%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(14.31%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(3.77%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(18.08%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	12.52%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	30.46%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	30.46%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	12.52%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	30.46%	19.16%
b. Tier 1/Tier 2 UAL rate	(18.08%)	(9.79%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	12.52%	9.52%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	47,571	47,571
Tier 1/Tier 2 valuation payroll	0	47,571	47,571
OPSRP valuation payroll	0	235,267	235,267
Combined valuation payroll	**$0**	**$282,838**	**$282,838**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	1	5	6	0	1	3	4
Total	0	1	5	6	0	1	3	4
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	2	1	0	3	2	1	0	3
Total	2	1	0	3	2	1	0	3
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	7	1	0	8	7	1	0	8
Total	7	1	0	8	7	1	0	8
Grand Total Number of Members	**9**	**3**	**5**	**17**	**9**	**3**	**3**	**15**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54				1						**1**
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	1,305
50-54	2	1,044
55-59		
60-64		
65-69		
70-74		
75+		
Total	3	1,131

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	552
60-64	1	1,082
65-69	1	663
70-74	2	782
75-79		
80-84	2	193
85-89	1	113
90-94		
95-99		
100+		
Total	8	545

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

West Side Rural Fire Protection District/2796
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
West Side Rural Fire Protection District/2796

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

West Side Rural Fire Protection District -- #2796

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for West Side Rural Fire Protection District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to West Side Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for West Side Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.95%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(4.82%)	(4.82%)	(4.82%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**13.69%**	**5.23%**	**9.96%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**14.18%**	**5.65%**	**10.38%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 107%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.76%	11.76%
Minimum 2019-2021 Rate	8.76%	5.76%
Maximum 2019-2021 Rate	14.76%	17.76%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$231,035	$197,980	($33,055)	117%	$82,111	(40%)
12/31/2012	278,239	226,802	(51,437)	123%	84,601	(61%)
12/31/2013	335,523	253,385	(82,138)	132%	87,178	(94%)
12/31/2014	369,674	315,804	(53,870)	117%	129,580	(42%)
12/31/2015	386,385	358,137	(28,248)	108%	43,749	(65%)
12/31/2016	424,346	397,513	(26,833)	107%	49,659	(54%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

West Side Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($26,833)	($28,248)
Allocated pooled OPSRP UAL	8,549	6,220
Side account	0	0
Net unfunded pension actuarial accrued liability	(18,284)	(22,028)
Combined valuation payroll	49,659	43,749
Net pension UAL as a percentage of payroll	(37%)	(50%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($7)	$212

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$0	$0
Tier 1/Tier 2 valuation payroll	0	0
Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
Tier 1/ Tier 2 Actuarial accrued liability	$397,513	$358,137
Actuarial asset value	424,346	386,385
Tier 1/Tier 2 Unfunded actuarial accrued liability	(26,833)	(28,248)
Tier 1/ Tier 2 Funded status	107%	108%
Combined valuation payroll	$49,659	$43,749
Tier 1/Tier 2 UAL as a percentage of payroll	(54%)	(65%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(4.82%)	(4.95%)
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	**Actuarial Valuation as of**	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	**Actuarial Valuation as of**	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	49,659	43,749
3. Average Amortization factor	8.994	9.504
4. Total side account rate ***(-1. ÷ 2. ÷ 3.)*** [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$31,426	$29,874
2. Employer reserves	392,920	356,511
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$424,346**	**$386,385**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$386,385
2.	Regular employer contributions	10,344
3.	Benefit payments and expenses	0
4.	Adjustments [1]	(647)
5.	Interest credited	28,264
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$424,346**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$0**	**$0**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	397,513	358,137
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$397,513**	**$358,137**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$397,513**	**$358,137**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$385,460	$397,513	$12,053

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$397,513	$358,137
2. Actuarial value of assets	424,346	386,385
3. Unfunded accrued liability *(1. – 2.)*	(26,833)	(28,248)
4. Funded percentage *(2. ÷ 1.)*	107%	108%
5. Combined valuation payroll	$49,659	$43,749
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(54%)	(65%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($82,074)	($6,382)	($5,901)	($81,593)	($6,466)
December 31, 2015	$53,826	$3,895	$3,881	$53,812	$3,938
December 31, 2016	N/A	N/A	N/A	$948	$67
Total				**($26,833)**	**($2,461)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$358,137
b. Normal cost at December 31, 2015 (excluding assumed expenses)	0
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	26,860
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	384,997
f. Change in actuarial accrued liability due to assumption, method, and plan changes	12,053
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	397,050
2. Actuarial accrued liability at December 31, 2016	397,513
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(463)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	386,385
b. Contributions for 2016[1]	10,344
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	29,367
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	426,096
5. Actuarial value of assets at December 31, 2016	424,346
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(1,750)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($2,213)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($28,248)**
2. Expected increase	(12,851)
3. Liability (gain)/loss	463
4. Asset (gain)/loss	1,750
5. Change due to changes in assumptions, methods, and plan provisions	12,053
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**($26,833)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$0**	**$0**	**16.95%**	**$0**	**$0**	**16.71%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($26,833)	($28,248)
2. Next year's Tier 1/Tier 2 UAL payment	(2,461)	(2,487)
3. Combined valuation payroll	49,659	43,749
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(4.96%)	(5.68%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	(4.96%)	(5.68%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	12.13%	11.18%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	11.76%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.76%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.35%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	107%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	8.76%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	14.76%
7. Advisory July 1, 2019 total pension rate, before adjustment	12.13%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(4.96%)
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(4.96%)
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	12.13%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.95%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.95%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	12.13%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	(4.96%)	(5.10%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	12.13%	11.76%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	0	0	0
OPSRP valuation payroll	4,182	45,477	49,659
Combined valuation payroll	**$4,182**	**$45,477**	**$49,659**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	1	1	2	0	1	1	2
Total	0	1	1	2	0	1	1	2
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**0**	**1**	**1**	**2**	**0**	**1**	**1**	**2**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69				1						**1**
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

West Valley Fire District/2725
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

November 2017
West Valley Fire District/2725

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

West Valley Fire District -- #2725

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for West Valley Fire District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to West Valley Fire District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for West Valley Fire District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.02%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	1.33%	1.33%	1.33%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**21.91%**	**11.38%**	**16.11%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**22.40%**	**11.80%**	**16.53%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 71%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.96%	16.96%
Minimum 2019-2021 Rate	13.57%	10.18%
Maximum 2019-2021 Rate	20.35%	23.74%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$596,571	$590,253	($6,318)	101%	$457,183	(1%)
12/31/2012	699,866	728,108	28,242	96%	368,253	8%
12/31/2013	813,970	782,700	(31,270)	104%	509,464	(6%)
12/31/2014	770,983	1,025,215	254,232	75%	604,114	42%
12/31/2015	753,673	1,063,541	309,868	71%	648,188	48%
12/31/2016	769,711	1,085,636	315,925	71%	643,371	49%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

West Valley Fire District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$315,925	$309,868
Allocated pooled OPSRP UAL	110,764	92,149
Side account	0	0
Net unfunded pension actuarial accrued liability	426,689	402,017
Combined valuation payroll	643,371	648,188
Net pension UAL as a percentage of payroll	66%	62%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($88)	$3,147

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$5,188	$5,029
Tier 1/Tier 2 valuation payroll	27,278	22,349
Tier 1/Tier 2 pension normal cost rate	19.02%	22.50%
Tier 1/ Tier 2 Actuarial accrued liability	$1,085,636	$1,063,541
Actuarial asset value	769,711	753,673
Tier 1/Tier 2 Unfunded actuarial accrued liability	315,925	309,868
Tier 1/ Tier 2 Funded status	71%	71%
Combined valuation payroll	$643,371	$648,188
Tier 1/Tier 2 UAL as a percentage of payroll	49%	48%
Tier 1/Tier 2 UAL rate	1.33%	(5.54%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	3	4
Tier 1/Tier 2 retirees and beneficiaries	7	6

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) **RHIA**	Actuarial Valuation as of December 31, 2016	December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	643,371	648,188
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$56,575	$77,396
2. Employer reserves	511,166	477,536
3. Benefits in force reserve	201,970	198,741
4. Total market value of assets ***(1. + 2. + 3.)***	**$769,711**	**$753,673**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$753,673
2.	Regular employer contributions	2,689
3.	Benefit payments and expenses	(39,545)
4.	Adjustments [1]	894
5.	Interest credited	51,999
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$769,711**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	5,188	5,029
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$5,188**	**$5,029**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$5,244	$5,188	($56)

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	**December 31, 2015**
Active Members		
▪ Tier 1 Police & Fire	$32,581	$31,392
▪ Tier 1 General Service	11,391	45,820
▪ Tier 2 Police & Fire	296,651	293,349
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$340,623**	**$370,561**
Dormant Members	268,030	263,859
Retired Members and Beneficiaries	476,983	429,121
Total Actuarial Accrued Liability	**$1,085,636**	**$1,063,541**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$1,054,618	$1,085,636	$31,018

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,085,636	$1,063,541
2. Actuarial value of assets	769,711	753,673
3. Unfunded accrued liability *(1. – 2.)*	315,925	309,868
4. Funded percentage *(2. ÷ 1.)*	71%	71%
5. Combined valuation payroll	$643,371	$648,188
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	49%	48%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($31,247)	($2,430)	($2,246)	($31,063)	($2,462)
December 31, 2015	$341,115	$24,683	$24,598	$341,030	$24,955
December 31, 2016	N/A	N/A	N/A	$5,958	$421
Total				**$315,925**	**$22,914**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,063,541
b. Normal cost at December 31, 2015 (excluding assumed expenses)	4,796
c. Benefit payments during 2016	(39,212)
d. Interest at 7.50% to December 31, 2016	78,475
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,107,600
f. Change in actuarial accrued liability due to assumption, method, and plan changes	31,018
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,138,618
2. Actuarial accrued liability at December 31, 2016	1,085,636
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	52,982
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	753,673
b. Contributions for 2016[1]	2,689
c. Benefit payments and expenses during 2016	(39,545)
d. Interest at 7.50% to December 31, 2016	55,143
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	771,961
5. Actuarial value of assets at December 31, 2016	769,711
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(2,250)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$50,732**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$309,868**
2. Expected increase	25,771
3. Liability (gain)/loss	(52,982)
4. Asset (gain)/loss	2,250
5. Change due to changes in assumptions, methods, and plan provisions	31,018
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**$315,925**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	5,188	27,278	19.02%	5,029	22,349	22.50%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$5,188**	**$27,278**	**19.02%**	**$5,029**	**$22,349**	**22.50%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$315,925	$309,868
2. Next year's Tier 1/Tier 2 UAL payment	22,914	22,253
3. Combined valuation payroll	643,371	648,188
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	3.56%	3.43%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.02%	22.50%
b. Tier 1/Tier 2 UAL rate	3.56%	3.43%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	22.72%	26.08%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.96%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.96%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.39%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.39%
c. Funded percentage	71%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.39%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.57%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	20.35%
7. Advisory July 1, 2019 total pension rate, before adjustment	22.72%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(2.37%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	3.56%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	1.19%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	20.35%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	19.02%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.02%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	20.35%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.02%	22.50%
b. Tier 1/Tier 2 UAL rate	1.19%	(5.69%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	20.35%	16.96%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$27,278	$0	$27,278
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	27,278	0	27,278
OPSRP valuation payroll	3,274	612,819	616,093
Combined valuation payroll	**$30,552**	**$612,819**	**$643,371**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	0	1	1	0	0	1
Police & Fire	0	0	11	11	0	0	10	10
Total	1	0	11	12	1	0	10	11
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	1	0	N/A	1
Police & Fire	2	11	N/A	13	2	10	N/A	12
Total	2	11	N/A	13	3	10	N/A	13
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	2	1	3	6	3	1	2	6
Total	2	1	3	6	3	1	2	6
Retired Members and Beneficiaries								
General Service	1	0	0	1	0	0	0	0
Police & Fire	5	1	0	6	5	1	0	6
Total	6	1	0	7	5	1	0	6
Grand Total Number of Members	**11**	**13**	**14**	**38**	**12**	**12**	**12**	**36**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64			1							**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	23
45-49		
50-54		
55-59	1	1,473
60-64		
65-69		
70-74	1	531
75+		
Total	3	675

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	1	16
45-49	1	21
50-54	1	2,024
55-59		
60-64	3	166
65-69		
70-74		
75-79		
80-84	1	57
85-89		
90-94		
95-99		
100+		
Total	7	374

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Winchester Bay Sanitary District/2714
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Winchester Bay Sanitary District/2714

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Winchester Bay Sanitary District -- #2714

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Winchester Bay Sanitary District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Winchester Bay Sanitary District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Winchester Bay Sanitary District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	14.85%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	5.08%	5.08%	5.08%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**21.49%**	**15.13%**	**19.86%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**21.98%**	**15.55%**	**20.28%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

1 *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 74%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.91%	16.91%
Minimum 2019-2021 Rate	13.53%	10.15%
Maximum 2019-2021 Rate	20.29%	23.67%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$170,661	$234,713	$64,052	73%	$138,822	46%
12/31/2012	204,010	269,846	65,836	76%	143,212	46%
12/31/2013	243,389	280,556	37,167	87%	144,040	26%
12/31/2014	267,042	343,278	76,236	78%	149,211	51%
12/31/2015	279,590	367,587	87,997	76%	152,862	58%
12/31/2016	309,099	415,243	106,144	74%	160,956	66%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Winchester Bay Sanitary District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$106,144	$87,997
Allocated pooled OPSRP UAL	27,711	21,731
Side account	0	0
Net unfunded pension actuarial accrued liability	133,855	109,728
Combined valuation payroll	160,956	152,862
Net pension UAL as a percentage of payroll	83%	72%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($22)	$742

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	December 31, 2015
Normal cost	$16,456	$15,321
Tier 1/Tier 2 valuation payroll	110,837	107,328
Tier 1/Tier 2 pension normal cost rate	14.85%	14.27%
Tier 1/ Tier 2 Actuarial accrued liability	$415,243	$367,587
Actuarial asset value	309,099	279,590
Tier 1/Tier 2 Unfunded actuarial accrued liability	106,144	87,997
Tier 1/ Tier 2 Funded status	74%	76%
Combined valuation payroll	$160,956	$152,862
Tier 1/Tier 2 UAL as a percentage of payroll	66%	58%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	5.08%	2.64%
Tier 1/Tier 2 active members [1]	2	2
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	2	2

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	160,956	152,862
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$22,494	$21,383
2. Employer reserves	237,480	205,831
3. Benefits in force reserve	49,126	52,376
4. Total market value of assets ***(1. + 2. + 3.)***	**$309,099**	**$279,590**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$279,590
2. Regular employer contributions	15,966
3. Benefit payments and expenses	(9,619)
4. Adjustments [1]	2,452
5. Interest credited	20,710
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$309,099**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	16,456	15,321
Total	**$16,456**	**$15,321**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$15,953	$16,456	$503

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	299,225	254,498
▪ **Total Active Members**	**$299,225**	**$254,498**
Dormant Members	0	0
Retired Members and Beneficiaries	116,018	113,089
Total Actuarial Accrued Liability	**$415,243**	**$367,587**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$397,954	$415,243	$17,289

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$415,243	$367,587
2. Actuarial value of assets	309,099	279,590
3. Unfunded accrued liability *(1. – 2.)*	106,144	87,997
4. Funded percentage *(2. ÷ 1.)*	74%	76%
5. Combined valuation payroll	$160,956	$152,862
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	66%	58%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$37,138	$2,888	$2,670	$36,920	$2,926
December 31, 2015	$50,859	$3,680	$3,667	$50,846	$3,721
December 31, 2016	N/A	N/A	N/A	$18,378	$1,298
Total				**$106,144**	**$7,945**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$367,587
b. Normal cost at December 31, 2015 (excluding assumed expenses)	14,612
c. Benefit payments during 2016	(9,538)
d. Interest at 7.50% to December 31, 2016	27,759
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	400,420
f. Change in actuarial accrued liability due to assumption, method, and plan changes	17,289
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	417,709
2. Actuarial accrued liability at December 31, 2016	415,243
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	2,466
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	279,590
b. Contributions for 2016[1]	15,966
c. Benefit payments and expenses during 2016	(9,619)
d. Interest at 7.50% to December 31, 2016	21,207
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	307,145
5. Actuarial value of assets at December 31, 2016	309,099
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	1,955
7. Total actuarial gain/(loss) *(3. + 6.)*	**$4,421**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$87,997**
2. Expected increase	5,279
3. Liability (gain)/loss	(2,466)
4. Asset (gain)/loss	(1,955)
5. Change due to changes in assumptions, methods, and plan provisions	17,289
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$106,144**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	16,456	110,837	14.85%	15,321	107,328	14.27%
Total	**$16,456**	**$110,837**	**14.85%**	**$15,321**	**$107,328**	**14.27%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$106,144	$87,997
2. Next year's Tier 1/Tier 2 UAL payment	7,945	6,568
3. Combined valuation payroll	160,956	152,862
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	4.94%	4.30%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.85%	14.27%
b. Tier 1/Tier 2 UAL rate	4.94%	4.30%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	19.93%	18.72%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.91%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.91%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.38%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.38%
c. Funded percentage	74%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.38%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.53%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	20.29%
7. Advisory July 1, 2019 total pension rate, before adjustment	19.93%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	4.94%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	4.94%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	19.93%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	14.85%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	14.85%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	19.93%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.85%	14.27%
b. Tier 1/Tier 2 UAL rate	4.94%	2.49%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	19.93%	16.91%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	110,837	0	110,837
Tier 1/Tier 2 valuation payroll	110,837	0	110,837
OPSRP valuation payroll	50,119	0	50,119
Combined valuation payroll	**$160,956**	**$0**	**$160,956**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	2	1	3	0	2	1	3
Police & Fire	0	0	0	0	0	0	0	0
Total	0	2	1	3	0	2	1	3
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	2	0	0	2	2	0	0	2
Police & Fire	0	0	0	0	0	0	0	0
Total	2	0	0	2	2	0	0	2
Grand Total Number of Members	**2**	**2**	**1**	**5**	**2**	**2**	**1**	**5**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59				1						1
60-64			1							1
65-69										
70-74										
75+										
Total	0	0	1	1	0	0	0	0	0	2

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69	1	327
70-74		
75-79		
80-84		
85-89	1	827
90-94		
95-99		
100+		
Total	2	577

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Yamhill County/2015
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Yamhill County/2015

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Yamhill County -- #2015

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Yamhill County to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Yamhill County.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Yamhill County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.27%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	1.44%	1.44%	1.44%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**19.27%**	**11.49%**	**16.22%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**19.76%**	**11.91%**	**16.64%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 76%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	14.71%	14.71%
Minimum 2019-2021 Rate	11.71%	8.71%
Maximum 2019-2021 Rate	17.71%	20.71%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$49,368,116	$53,073,411	$3,705,295	93%	$21,695,391	17%
12/31/2012	55,280,975	58,352,215	3,071,240	95%	21,979,926	14%
12/31/2013	61,606,382	62,439,555	833,172	99%	22,587,423	4%
12/31/2014	64,662,813	74,720,280	10,057,467	87%	23,980,678	42%
12/31/2015	63,565,447	79,347,419	15,781,972	80%	26,264,266	60%
12/31/2016	65,096,141	85,103,706	20,007,565	76%	26,601,709	75%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Yamhill County

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$20,007,565	$15,781,972
Allocated pooled OPSRP UAL	4,579,808	3,733,832
Side account	0	0
Net unfunded pension actuarial accrued liability	24,587,373	19,515,804
Combined valuation payroll	26,601,709	26,264,266
Net pension UAL as a percentage of payroll	92%	74%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($3,622)	$127,530

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$1,577,491	$1,700,899
Tier 1/Tier 2 valuation payroll	9,697,762	10,843,447
Tier 1/Tier 2 pension normal cost rate	16.27%	15.69%
Tier 1/ Tier 2 Actuarial accrued liability	$85,103,706	$79,347,419
Actuarial asset value	65,096,141	63,565,447
Tier 1/Tier 2 Unfunded actuarial accrued liability	20,007,565	15,781,972
Tier 1/ Tier 2 Funded status	76%	80%
Combined valuation payroll	$26,601,709	$26,264,266
Tier 1/Tier 2 UAL as a percentage of payroll	75%	60%
Tier 1/Tier 2 UAL rate	1.44%	(0.98%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	144	168
Tier 1/Tier 2 dormant members	96	93
Tier 1/Tier 2 retirees and beneficiaries	243	221

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions) **RHIA**	Actuarial Valuation as of December 31, 2016	Actuarial Valuation as of December 31, 2015
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	26,601,709	26,264,266
3. Average Amortization factor	8.994	9.504
4. Total side account rate ***(-1. ÷ 2. ÷ 3.)*** [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$7,149,811	$7,347,426
2. Employer reserves	41,953,814	40,624,148
3. Benefits in force reserve	15,992,515	15,593,873
4. Total market value of assets ***(1. + 2. + 3.)***	**$65,096,141**	**$63,565,447**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$63,565,447
2.	Regular employer contributions	1,074,880
3.	Benefit payments and expenses	(3,131,255)
4.	Adjustments [1]	(884,490)
5.	Interest credited	4,471,558
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$65,096,141**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$255,347	$277,325
Tier 1 General Service	95,823	98,124
Tier 2 Police & Fire	393,903	364,112
Tier 2 General Service	832,418	961,338
Total	**$1,577,491**	**$1,700,899**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$1,534,213	$1,577,491	$43,278

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$9,343,449	$9,274,952
▪ Tier 1 General Service	2,525,432	2,226,273
▪ Tier 2 Police & Fire	7,845,389	7,029,801
▪ Tier 2 General Service	21,913,967	21,890,508
▪ **Total Active Members**	**$41,628,237**	**$40,421,534**
Dormant Members	5,706,752	5,255,726
Retired Members and Beneficiaries	37,768,717	33,670,159
Total Actuarial Accrued Liability	**$85,103,706**	**$79,347,419**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$82,634,685	$85,103,706	$2,469,021

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$85,103,706	$79,347,419
2. Actuarial value of assets	65,096,141	63,565,447
3. Unfunded accrued liability *(1. – 2.)*	20,007,565	15,781,972
4. Funded percentage *(2. ÷ 1.)*	76%	80%
5. Combined valuation payroll	$26,601,709	$26,264,266
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	75%	60%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$832,530	$64,733	$59,854	$827,651	$65,593
December 31, 2015	$14,949,442	$1,081,725	$1,077,992	$14,945,709	$1,093,642
December 31, 2016	N/A	N/A	N/A	$4,234,205	$298,962
Total				**$20,007,565**	**$1,458,197**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$79,347,419
b. Normal cost at December 31, 2015 (excluding assumed expenses)	1,622,419
c. Benefit payments during 2016	(3,104,923)
d. Interest at 7.50% to December 31, 2016	5,895,463
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	83,760,378
f. Change in actuarial accrued liability due to assumption, method, and plan changes	2,469,021
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	86,229,399
2. Actuarial accrued liability at December 31, 2016	85,103,706
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	1,125,693
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	63,565,447
b. Contributions for 2016[1]	1,074,880
c. Benefit payments and expenses during 2016	(3,131,255)
d. Interest at 7.50% to December 31, 2016	4,690,294
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	66,199,367
5. Actuarial value of assets at December 31, 2016	65,096,141
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(1,103,226)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$22,467**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$15,781,972**
2. Expected increase	1,779,039
3. Liability (gain)/loss	(1,125,693)
4. Asset (gain)/loss	1,103,226
5. Change due to changes in assumptions, methods, and plan provisions	2,469,021
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$20,007,565**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$255,347	$1,083,230	23.57%	$277,325	$1,241,841	22.33%
Tier 1 General Service	95,823	507,424	18.88%	98,124	493,513	19.88%
Tier 2 Police & Fire	393,903	1,974,978	19.94%	364,112	1,897,648	19.19%
Tier 2 General Service	832,418	6,132,130	13.57%	961,338	7,210,445	13.33%
Total	**$1,577,491**	**$9,697,762**	**16.27%**	**$1,700,899**	**$10,843,447**	**15.69%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$20,007,565	$15,781,972
2. Next year's Tier 1/Tier 2 UAL payment	1,458,197	1,146,458
3. Combined valuation payroll	26,601,709	26,264,266
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	5.48%	4.37%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.27%	15.69%
b. Tier 1/Tier 2 UAL rate	5.48%	4.37%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	21.89%	20.21%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	14.71%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	14.71%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	2.94%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	76%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	11.71%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	17.71%
7. Advisory July 1, 2019 total pension rate, before adjustment	21.89%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(4.18%)
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	5.48%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	1.30%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	17.71%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.27%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.27%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.71%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.27%	15.69%
b. Tier 1/Tier 2 UAL rate	1.30%	(1.13%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	17.71%	14.71%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$507,424	$1,083,230	$1,590,654
Tier 2	6,132,130	1,974,978	8,107,108
Tier 1/Tier 2 valuation payroll	6,639,554	3,058,208	9,697,762
OPSRP valuation payroll	13,872,016	3,031,931	16,903,947
Combined valuation payroll	**$20,511,570**	**$6,090,139**	**$26,601,709**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	9	100	292	401	10	120	279	409
Police & Fire	12	23	41	76	14	24	41	79
Total	21	123	333	477	24	144	320	488
Active Members with previous service segments with the employer								
General Service	20	69	N/A	89	19	59	N/A	78
Police & Fire	11	22	N/A	33	12	19	N/A	31
Total	31	91	N/A	122	31	78	N/A	109
Dormant Members								
General Service	11	64	30	105	11	64	18	93
Police & Fire	10	11	3	24	8	10	2	20
Total	21	75	33	129	19	74	20	113
Retired Members and Beneficiaries								
General Service	40	130	7	177	35	115	7	157
Police & Fire	69	4	0	73	65	6	0	71
Total	109	134	7	250	100	121	7	228
Grand Total Number of Members	**182**	**423**	**373**	**978**	**174**	**417**	**347**	**938**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34			1							**1**
35-39			6	2						**8**
40-44			5	8	1					**14**
45-49		1	4	19	6					**30**
50-54		1	4	20	1	6				**32**
55-59		1	1	19	1	3	1			**26**
60-64		1	1	23	1					**26**
65-69			1	3			1			**5**
70-74			1	1						**2**
75+										
Total	**0**	**4**	**24**	**95**	**10**	**9**	**2**	**0**	**0**	**144**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34	1	876
35-39	9	274
40-44	11	644
45-49	16	419
50-54	17	960
55-59	18	463
60-64	17	363
65-69	5	385
70-74	2	512
75+		
Total	96	530

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	1	1,213
45-49	2	135
50-54	11	1,149
55-59	18	1,368
60-64	46	1,010
65-69	66	1,060
70-74	57	927
75-79	26	590
80-84	13	496
85-89	2	526
90-94	1	469
95-99		
100+		
Total	243	952

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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November 2017

Yamhill Fire Protection District/2878
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

November 2017
Yamhill Fire Protection District/2878

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

November 2017
Yamhill Fire Protection District/2878

This report is prepared solely for the use and benefit of the Oregon Public Employees Retirement System, the employer named above, or its auditors solely for the purpose of completing an audit related to the matters herein. To the extent that this report is not subject to disclosure under applicable public records laws, it may not be provided to other third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. Milliman's consent to release this report to any third party may be conditioned on the third party signing a release except for situations where such release is prohibited by law.

No third party recipient of this report should rely upon Milliman's work contained herein. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Additional information is provided in the system-wide actuarial valuation report.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Yamhill Fire Protection District -- #2878

November 2017

CONTENTS

Executive Summary

Milliman has prepared this report for Yamhill Fire Protection District to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to Yamhill Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for Yamhill Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	11.89%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	1.60%	1.60%	1.60%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**15.05%**	**11.65%**	**16.38%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**15.54%**	**12.07%**	**16.80%**

In this report, the payroll of Tier 1 and Tier 2 members is referred to as Tier 1/Tier 2 valuation payroll. Combined valuation payroll refers to the payroll for Tier 1/Tier 2 members, OPSRP general service members and OPSRP police and fire members.

[1] *Includes Multnomah Fire District #10 rate.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 100%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.86%	16.86%
Minimum 2019-2021 Rate	13.49%	10.12%
Maximum 2019-2021 Rate	20.23%	23.60%

Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$0	$0	$0	0%	$0	0%
12/31/2012	0	0	0	0%	31,785	0%
12/31/2013	1	0	(1)	100%	74,622	0%
12/31/2014	4	0	(4)	0%	113,496	0%
12/31/2015	11	0	(11)	100%	94,927	0%
12/31/2016	23	0	(23)	0%	76,251	0%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

Executive Summary

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described later in this report. More detailed information can be found in the system-wide actuarial valuation report.

Yamhill Fire Protection District

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($23)	($11)
Allocated pooled OPSRP UAL	13,128	13,495
Side account	0	0
Net unfunded pension actuarial accrued liability	13,105	13,484
Combined valuation payroll	76,251	94,927
Net pension UAL as a percentage of payroll	17%	14%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($10)	$461

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$154	$0
Tier 1/Tier 2 valuation payroll	1,295	0
Tier 1/Tier 2 pension normal cost rate	11.89%	16.71%
Tier 1/ Tier 2 Actuarial accrued liability	$0	$0
Actuarial asset value	23	11
Tier 1/Tier 2 Unfunded actuarial accrued liability	(23)	(11)
Tier 1/ Tier 2 Funded status	0%	0%
Combined valuation payroll	$76,251	$94,927
Tier 1/Tier 2 UAL as a percentage of payroll	0%	0%
Tier 1/Tier 2 UAL rate	1.60%	0.15%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	0	0

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	76,251	94,927
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$0	$0
2. Employer reserves	23	11
3. Benefits in force reserve	0	0
4. Total market value of assets ***(1. + 2. + 3.)***	**$23**	**$11**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$11
2.	Regular employer contributions	102
3.	Benefit payments and expenses	0
4.	Adjustments [1]	(108)
5.	Interest credited	17
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$23**

[1] *Note the adjustment item above includes a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, and other adjustments made by PERS.*

Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	154	0
Tier 2 General Service	0	0
Total	**$154**	**$0**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$142	$154	$12

Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$0**	**$0**
Dormant Members	0	0
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$0**	**$0**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$0	$0	$0

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$0	$0
2. Actuarial value of assets	23	11
3. Unfunded accrued liability *(1. – 2.)*	(23)	(11)
4. Funded percentage *(2. ÷ 1.)*	100%	100%
5. Combined valuation payroll	$76,251	$94,927
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	0%	0%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($1)	$0	$0	($1)	$0
December 31, 2015	($10)	($1)	($1)	($10)	($1)
December 31, 2016	N/A	N/A	N/A	($12)	($1)
Total				**($23)**	**($2)**

Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$0
b. Normal cost at December 31, 2015 (excluding assumed expenses)	0
c. Benefit payments during 2016	0
d. Interest at 7.50% to December 31, 2016	0
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	0
f. Change in actuarial accrued liability due to assumption, method, and plan changes	0
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	0
2. Actuarial accrued liability at December 31, 2016	0
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	0
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	11
b. Contributions for 2016[1]	102
c. Benefit payments and expenses during 2016	0
d. Interest at 7.50% to December 31, 2016	5
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	118
5. Actuarial value of assets at December 31, 2016	23
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(95)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($95)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($11)**
2. Expected increase	(107)
3. Liability (gain)/loss	0
4. Asset (gain)/loss	95
5. Change due to changes in assumptions, methods, and plan provisions	0
6. UAL at December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***	**($23)**

[1] *Includes rate relief from side accounts.*

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**	**Normal Cost**	**Employer Tier 1/Tier 2 Valuation Payroll**	**Normal Cost Rate**
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	154	1,295	11.89%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$154**	**$1,295**	**11.89%**	**$0**	**$0**	**16.71%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($23)	($11)
2. Next year's Tier 1/Tier 2 UAL payment	(2)	(1)
3. Combined valuation payroll	76,251	94,927
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.00%	0.00%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	**July 1, 2017 Rates calculated as of December 31, 2015**
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.89%	16.71%
b. Tier 1/Tier 2 UAL rate	0.00%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	12.03%	16.86%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1. Current net Tier 1/Tier 2 pension contribution rate	16.86%
2. Employer contribution rate attributable to side accounts	0.00%
3. Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.86%
4. Size of rate collar	
a. 20% of current employer contribution rate *(20% x 3.)*	3.37%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.37%
c. Funded percentage	100%
d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.37%
5. Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.49%
6. Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	20.23%
7. Advisory July 1, 2019 total pension rate, before adjustment	12.03%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	1.46%
9. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	0.00%
10. Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	1.46%
11. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	13.49%
12. Tier 1/Tier 2 retiree healthcare rate	0.49%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.89%
15. Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.89%
16. Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	13.49%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.89%	16.71%
b. Tier 1/Tier 2 UAL rate	1.46%	0.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	13.49%	16.86%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	1,295	1,295
Tier 1/Tier 2 valuation payroll	0	1,295	1,295
OPSRP valuation payroll	5,095	69,861	74,956
Combined valuation payroll	**$5,095**	**$71,156**	**$76,251**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	1	1	0	0	3	3
Total	0	0	1	1	0	0	3	3
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	2	N/A	2	0	0	N/A	0
Total	0	2	N/A	2	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	1	1	0	0	0	0
Total	0	0	1	1	0	0	0	0
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Grand Total Number of Members	**0**	**2**	**2**	**4**	**0**	**0**	**3**	**3**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

Age	Years of Service									
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total		

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total		

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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