Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

City of Waldport/2261
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Waldport -- #2261

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for City of Waldport to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for City of Waldport

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	15.81%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	0.88%	0.88%	0.88%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**16.00%**	**10.64%**	**15.01%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**16.05%**	**10.64%**	**15.01%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 92%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	13.69%	13.69%
Minimum 2021-2023 Rate	10.69%	7.69%
Maximum 2021-2023 Rate	16.69%	19.69%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	3,947,584	3,952,605	5,021	100%	821,620	1%
12/31/2018	3,885,267	4,210,293	325,026	92%	830,186	39%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$325,026	$5,021
Allocated pooled OPSRP UAL	149,902	123,811
Side account	0	0
Net unfunded pension actuarial accrued liability	474,928	128,832
Combined valuation payroll	830,186	821,620
Net pension UAL as a percentage of payroll	57%	16%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($12,169)	($9,414)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$37,442	$45,434
Tier 1/Tier 2 valuation payroll	236,807	289,140
Tier 1/Tier 2 pension normal cost rate	15.81%	15.71%
Tier 1/ Tier 2 Actuarial accrued liability	$4,210,293	$3,952,605
Actuarial asset value	3,885,267	3,947,584
Tier 1/Tier 2 Unfunded actuarial accrued liability	325,026	5,021
Tier 1/ Tier 2 Funded status	92%	100%
Combined valuation payroll	$830,186	$821,620
Tier 1/Tier 2 UAL as a percentage of payroll	39%	1%
Tier 1/Tier 2 UAL rate	0.88%	(2.02%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	4	5
Tier 1/Tier 2 dormant members	3	4
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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	830,186	821,620
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$437,526	$495,092
2. Employer reserves	2,460,943	2,504,034
3. Benefits in force reserve	986,798	948,458
4. Total market value of assets ***(1. + 2. + 3.)***	**$3,885,267**	**$3,947,584**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$3,947,584
2.	Regular employer contributions	7,200
3.	Benefit payments and expenses	(216,220)
4.	Adjustments [1]	110,970
5.	Interest credited	35,732
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$3,885,267**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	37,442	35,059
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	10,375
Total	**$37,442**	**$45,434**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$36,534	$37,442	$908

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$77,111	$161,149
▪ Tier 1 General Service	878,850	767,264
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	241,279
▪ **Total Active Members**	**$955,961**	**$1,169,692**
Dormant Members	679,216	634,567
Retired Members and Beneficiaries	2,575,115	2,148,346
Total Actuarial Accrued Liability	**$4,210,293**	**$3,952,605**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$4,184,766	$4,210,293	$25,527

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, 2018	December 31, 2017
1. Actuarial accrued liability	$4,210,293	$3,952,605
2. Actuarial value of assets	3,885,267	3,947,584
3. Unfunded accrued liability *(1. – 2.)*	325,026	5,021
4. Funded percentage *(2. ÷ 1.)*	92%	100%
5. Combined valuation payroll	$830,186	$821,620
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	39%	1%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$325,026	$21,516
Total				**$325,026**	**$21,516**

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, 2017	$3,952,605
b. Normal cost at December 31, 2017 (excluding assumed expenses)	42,807
c. Benefit payments during 2018	(214,891)
d. Interest at 7.20% to December 31, 2018	278,393
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	4,058,914
f. Change in actuarial accrued liability due to assumption, method, and plan changes	25,527
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	4,084,441
2. Actuarial accrued liability at December 31, 2018	4,210,293
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(125,852)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	3,947,584
b. Contributions for 2018[1]	7,200
c. Benefit payments and expenses during 2018	(216,220)
d. Interest at 7.20% to December 31, 2018	276,701
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	4,015,266
5. Actuarial value of assets at December 31, 2018	3,885,267
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(129,999)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($255,851)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$5,021**
2. Expected increase	38,627
3. Liability (gain)/loss	125,852
4. Asset (gain)/loss	129,999
5. Change due to changes in assumptions, methods, and plan provisions	25,527
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$325,026**

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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	37,442	236,807	15.81%	35,059	226,900	15.45%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	10,375	62,240	16.67%
Total	**$37,442**	**$236,807**	**15.81%**	**$45,434**	**$289,140**	**15.71%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$325,026	$5,021
2. Next year's Tier 1/Tier 2 UAL payment	21,516	(2,779)
3. Combined valuation payroll	830,186	821,620
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	2.59%	(0.34%)

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	15.81%	15.71%
b. Tier 1/Tier 2 UAL rate	2.59%	(0.34%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	18.54%	15.52%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	13.69%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	13.69%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	2.74%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	92%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	10.69%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	16.69%
7. Advisory July 1, 2021 total pension rate, before adjustment	18.54%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(1.85%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	2.59%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.74%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	16.69%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	15.81%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	15.81%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	16.69%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	15.81%	15.71%
b. Tier 1/Tier 2 UAL rate	0.74%	(2.17%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	16.69%	13.69%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$236,807	$0	$236,807
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	236,807	0	236,807
OPSRP valuation payroll	593,379	0	593,379
Combined valuation payroll	**$830,186**	**$0**	**$830,186**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	4	0	10	14	4	1	11	16
Police & Fire	0	0	0	0	0	0	0	0
Total	4	0	10	14	4	1	11	16
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	2	0	N/A	2	3	0	N/A	3
Total	2	0	N/A	2	3	0	N/A	3
Dormant Members								
General Service	3	0	1	4	3	0	1	4
Police & Fire	0	0	0	0	1	0	0	1
Total	3	0	1	4	4	0	1	5
Retired Members and Beneficiaries								
General Service	12	5	0	17	12	4	0	16
Police & Fire	8	0	0	8	7	0	0	7
Total	20	5	0	25	19	4	0	23
Grand Total Number of Members	**29**	**5**	**11**	**45**	**30**	**5**	**12**	**47**

[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, 2018

	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				**2**
65-69					1					**1**
70-74										
75+										
Total	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**4**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

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	2,518
60-64	2	733
65-69		
70-74		
75+		
Total	3	1,328

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	1	642
55-59	1	934
60-64	3	1,233
65-69	4	672
70-74	8	689
75-79	3	430
80-84		
85-89	4	694
90-94	1	982
95-99		
100+		
Total	25	741

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

City of Dufur/2262
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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.

December 2019
City of Dufur/2262

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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
City of Dufur/2262

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Dufur -- #2262

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for City of Dufur to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Dufur.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for City of Dufur

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.97%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	12.20%	12.20%	12.20%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**28.48%**	**21.96%**	**26.33%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**28.53%**	**21.96%**	**26.33%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 64%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	22.10%	22.10%
Minimum 2021-2023 Rate	17.68%	13.26%
Maximum 2021-2023 Rate	26.52%	30.94%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$699,914	$733,118	$33,204	95%	$108,602	31%
12/31/2014	712,173	852,957	140,784	83%	86,676	162%
12/31/2015	693,501	869,514	176,013	80%	119,198	148%
12/31/2016	712,040	945,005	232,965	75%	83,925	278%
12/31/2017	664,923	952,726	287,803	70%	99,754	289%
12/31/2018	613,499	952,529	339,030	64%	131,466	258%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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 Dufur

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$339,030	$287,803
Allocated pooled OPSRP UAL	23,738	15,032
Side account	0	0
Net unfunded pension actuarial accrued liability	362,768	302,835
Combined valuation payroll	131,466	99,754
Net pension UAL as a percentage of payroll	276%	304%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($1,927)	($1,143)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$0	$0
Tier 1/Tier 2 valuation payroll	0	0
Tier 1/Tier 2 pension normal cost rate	16.97%	16.92%
Tier 1/ Tier 2 Actuarial accrued liability	$952,529	$952,726
Actuarial asset value	613,499	664,923
Tier 1/Tier 2 Unfunded actuarial accrued liability	339,030	287,803
Tier 1/ Tier 2 Funded status	64%	70%
Combined valuation payroll	$131,466	$99,754
Tier 1/Tier 2 UAL as a percentage of payroll	258%	289%
Tier 1/Tier 2 UAL rate	12.20%	5.18%
(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	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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	131,466	99,754
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$0	$0
2. Employer reserves	248,485	244,310
3. Benefits in force reserve	365,014	420,612
4. Total market value of assets ***(1. + 2. + 3.)***	**$613,499**	**$664,923**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$664,923
2. Regular employer contributions	3,676
3. Benefit payments and expenses	(79,979)
4. Adjustments [1]	23,440
5. Interest credited	1,440
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$613,499**

[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, 2018	December 31, 2017
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, 2018.

	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, 2018	December 31, 2017
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	952,529	952,726
Total Actuarial Accrued Liability	**$952,529**	**$952,726**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$952,453	$952,529	$76

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, 2018	December 31, 2017
1. Actuarial accrued liability	$952,529	$952,726
2. Actuarial value of assets	613,499	664,923
3. Unfunded accrued liability *(1. – 2.)*	339,030	287,803
4. Funded percentage *(2. ÷ 1.)*	64%	70%
5. Combined valuation payroll	$131,466	$99,754
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	258%	289%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$339,030	$22,443
Total				**$339,030**	**$22,443**

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, 2017	$952,726
b. Normal cost at December 31, 2017 (excluding assumed expenses)	0
c. Benefit payments during 2018	(79,488)
d. Interest at 7.20% to December 31, 2018	65,735
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	938,973
f. Change in actuarial accrued liability due to assumption, method, and plan changes	76
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	939,049
2. Actuarial accrued liability at December 31, 2018	952,529
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(13,480)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	664,923
b. Contributions for 2018[1]	3,676
c. Benefit payments and expenses during 2018	(79,979)
d. Interest at 7.20% to December 31, 2018	45,128
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	633,747
5. Actuarial value of assets at December 31, 2018	613,499
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(20,248)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($33,728)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$287,803**
2. Expected increase	17,423
3. Liability (gain)/loss	13,480
4. Asset (gain)/loss	20,248
5. Change due to changes in assumptions, methods, and plan provisions	76
6. UAL at December 31, 2018 *(1. + 2. + 3. + 4. + 5.)*	**$339,030**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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**	**16.97%**	**$0**	**$0**	**16.92%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$339,030	$287,803
2. Next year's Tier 1/Tier 2 UAL payment	22,443	21,493
3. Combined valuation payroll	131,466	99,754
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	17.07%	21.55%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.97%	16.92%
b. Tier 1/Tier 2 UAL rate	17.07%	21.55%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	34.18%	38.62%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	22.10%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	22.10%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	4.42%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.42%
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.)*	7.07%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	15.03%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	29.17%
7. Advisory July 1, 2021 total pension rate, before adjustment	34.18%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(5.01%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	17.07%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	12.06%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	29.17%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.97%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.97%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	29.17%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.97%	16.92%
b. Tier 1/Tier 2 UAL rate	12.06%	5.03%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	29.17%	22.10%

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	131,466	0	131,466
Combined valuation payroll	**$131,466**	**$0**	**$131,466**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	3	3	0	0	3	3
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	3	3	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	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	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
Retired Members and Beneficiaries								
General Service	6	0	0	6	6	0	0	6
Police & Fire	1	0	0	1	1	0	0	1
Total	7	0	0	7	7	0	0	7
Grand Total Number of Members	**7**	**0**	**5**	**12**	**7**	**0**	**5**	**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, 2018

	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, 2018

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	564
65-69		
70-74	2	1,985
75-79	1	56
80-84		
85-89	1	284
90-94		
95-99		
100+		
Total	7	857

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

City of Gervais/2264
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
City of Gervais/2264

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Gervais -- #2264

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for City of Gervais to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Gervais.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for City of Gervais

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.33%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	6.25%	6.25%	6.25%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**18.89%**	**16.01%**	**20.38%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**18.94%**	**16.01%**	**20.38%**

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.*

[2] *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

[3] *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 73%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	16.37%	16.37%
Minimum 2021-2023 Rate	13.10%	9.83%
Maximum 2021-2023 Rate	19.64%	22.91%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$1,100,555	$1,090,245	($10,310)	101%	$483,330	(2%)
12/31/2014	1,168,826	1,329,370	160,544	88%	618,303	26%
12/31/2015	1,199,137	1,454,329	255,192	82%	577,782	44%
12/31/2016	1,252,432	1,554,289	301,857	81%	612,018	49%
12/31/2017	1,434,879	1,782,466	347,587	81%	582,971	60%
12/31/2018	1,407,489	1,934,596	527,107	73%	571,278	92%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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 Gervais

	Actuarial Valuation as of	
	December 31, 2018	December 31, 2017
T1/T2 UAL	$527,107	$347,587
Allocated pooled OPSRP UAL	103,152	87,849
Side account	0	0
Net unfunded pension actuarial accrued liability	630,259	435,436
Combined valuation payroll	571,278	582,971
Net pension UAL as a percentage of payroll	110%	75%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($8,374)	($6,680)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$29,050	$26,211
Tier 1/Tier 2 valuation payroll	217,969	210,877
Tier 1/Tier 2 pension normal cost rate	13.33%	12.43%
Tier 1/ Tier 2 Actuarial accrued liability	$1,934,596	$1,782,466
Actuarial asset value	1,407,489	1,434,879
Tier 1/Tier 2 Unfunded actuarial accrued liability	527,107	347,587
Tier 1/ Tier 2 Funded status	73%	81%
Combined valuation payroll	$571,278	$582,971
Tier 1/Tier 2 UAL as a percentage of payroll	92%	60%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	6.25%	3.94%
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	1	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, 2018	December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2018	December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	571,278	582,971
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$174,252	$209,816
2. Employer reserves	1,030,995	1,044,495
3. Benefits in force reserve	202,242	180,569
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,407,489**	**$1,434,879**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$1,434,879
2.	Regular employer contributions	34,065
3.	Benefit payments and expenses	(44,314)
4.	Adjustments [1]	(29,728)
5.	Interest credited	12,587
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,407,489**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	29,050	26,211
Total	**$29,050**	**$26,211**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$27,648	$29,050	$1,402

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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$714,224	$790,208
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	109,534	97,787
▪ Tier 2 General Service	560,817	485,467
▪ **Total Active Members**	**$1,384,575**	**$1,373,462**
Dormant Members	22,258	0
Retired Members and Beneficiaries	527,763	409,004
Total Actuarial Accrued Liability	**$1,934,596**	**$1,782,466**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$1,917,034	$1,934,596	$17,563

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, 2018	December 31, 2017
1. Actuarial accrued liability	$1,934,596	$1,782,466
2. Actuarial value of assets	1,407,489	1,434,879
3. Unfunded accrued liability *(1. – 2.)*	527,107	347,587
4. Funded percentage *(2. ÷ 1.)*	73%	81%
5. Combined valuation payroll	$571,278	$582,971
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	92%	60%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$527,107	$34,894
Total				**$527,107**	**$34,894**

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, 2017	$1,782,466
b. Normal cost at December 31, 2017 (excluding assumed expenses)	24,696
c. Benefit payments during 2018	(44,041)
d. Interest at 7.20% to December 31, 2018	127,641
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,890,763
f. Change in actuarial accrued liability due to assumption, method, and plan changes	17,563
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	1,908,326
2. Actuarial accrued liability at December 31, 2018	1,934,596
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(26,271)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	1,434,879
b. Contributions for 2018[1]	34,065
c. Benefit payments and expenses during 2018	(44,314)
d. Interest at 7.20% to December 31, 2018	102,942
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	1,527,573
5. Actuarial value of assets at December 31, 2018	1,407,489
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(120,084)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($146,355)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$347,587**
2. Expected increase	15,602
3. Liability (gain)/loss	26,271
4. Asset (gain)/loss	120,084
5. Change due to changes in assumptions, methods, and plan provisions	17,563
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$527,107**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	29,050	217,969	13.33%	26,211	210,877	12.43%
Total	**$29,050**	**$217,969**	**13.33%**	**$26,211**	**$210,877**	**12.43%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$527,107	$347,587
2. Next year's Tier 1/Tier 2 UAL payment	34,894	25,854
3. Combined valuation payroll	571,278	582,971
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	6.11%	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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	13.33%	12.43%
b. Tier 1/Tier 2 UAL rate	6.11%	4.43%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	19.58%	17.01%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	16.37%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	16.37%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.27%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.27%
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.)*	3.27%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	13.10%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	19.64%
7. Advisory July 1, 2021 total pension rate, before adjustment	19.58%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	6.11%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	6.11%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	19.58%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.33%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.33%
16. Advisory July 1, 2021 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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	13.33%	12.43%
b. Tier 1/Tier 2 UAL rate	6.11%	3.79%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	19.58%	16.37%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	217,969	0	217,969
Tier 1/Tier 2 valuation payroll	217,969	0	217,969
OPSRP valuation payroll	234,904	118,405	353,309
Combined valuation payroll	**$452,873**	**$118,405**	**$571,278**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	3	4	7	0	3	4	7
Police & Fire	0	0	2	2	0	0	2	2
Total	0	3	6	9	0	3	6	9
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	5	1	N/A	6	7	1	N/A	8
Total	5	1	N/A	6	7	1	N/A	8
Dormant Members								
General Service	0	0	1	1	0	0	1	1
Police & Fire	1	0	1	2	0	0	1	1
Total	1	0	2	3	0	0	2	2
Retired Members and Beneficiaries								
General Service	4	0	0	4	4	0	0	4
Police & Fire	3	0	0	3	2	0	0	2
Total	7	0	0	7	6	0	0	6
Grand Total Number of Members	**13**	**4**	**8**	**25**	**13**	**4**	**8**	**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, 2018

	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				1						**1**
65-69				1						**1**
70-74										
75+										
Total	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	1	162
55-59		
60-64		
65-69		
70-74		
75+		
Total	1	162

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	3	569
65-69	2	652
70-74	1	198
75-79		
80-84	1	113
85-89		
90-94		
95-99		
100+		
Total	7	475

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

City of Keizer/2279
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
City of Keizer/2279

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Keizer -- #2279

December 2019

Secondary Employers

2539 Keizer Water District

CONTENTS

Executive Summary

Milliman has prepared this report for City of Keizer to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Keizer.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for City of Keizer

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.77%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	4.35%	4.35%	4.35%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**23.43%**	**14.11%**	**18.48%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**23.48%**	**14.11%**	**18.48%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 67%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	19.14%	19.14%
Minimum 2021-2023 Rate	15.31%	11.48%
Maximum 2021-2023 Rate	22.97%	26.80%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$18,121,330	$18,330,016	$208,686	99%	$6,014,572	3%
12/31/2014	19,083,628	23,337,146	4,253,518	82%	6,419,498	66%
12/31/2015	18,807,213	24,863,283	6,056,070	76%	6,629,305	91%
12/31/2016	19,510,223	27,647,523	8,137,300	71%	6,775,495	120%
12/31/2017	21,859,540	29,725,265	7,865,726	74%	7,030,648	112%
12/31/2018	21,067,227	31,285,782	10,218,555	67%	7,495,143	136%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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 Keizer

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$10,218,555	$7,865,725
Allocated pooled OPSRP UAL	1,353,352	1,059,456
Side account	0	0
Net unfunded pension actuarial accrued liability	11,571,907	8,925,181
Combined valuation payroll	7,495,143	7,030,648
Net pension UAL as a percentage of payroll	154%	127%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($109,862)	($80,559)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$574,051	$605,004
Tier 1/Tier 2 valuation payroll	2,904,325	3,102,558
Tier 1/Tier 2 pension normal cost rate	19.77%	19.50%
Tier 1/ Tier 2 Actuarial accrued liability	$31,285,782	$29,725,265
Actuarial asset value	21,067,227	21,859,540
Tier 1/Tier 2 Unfunded actuarial accrued liability	10,218,555	7,865,725
Tier 1/ Tier 2 Funded status	67%	74%
Combined valuation payroll	$7,495,143	$7,030,648
Tier 1/Tier 2 UAL as a percentage of payroll	136%	112%
Tier 1/Tier 2 UAL rate	4.35%	(0.36%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	29	32
Tier 1/Tier 2 dormant members	4	3
Tier 1/Tier 2 retirees and beneficiaries	35	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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	7,495,143	7,030,648
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$2,764,312	$2,931,045
2. Employer reserves	13,171,549	13,311,543
3. Benefits in force reserve	5,131,366	5,616,952
4. Total market value of assets ***(1. + 2. + 3.)***	**$21,067,227**	**$21,859,540**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$21,859,540
2.	Regular employer contributions	415,574
3.	Benefit payments and expenses	(1,124,350)
4.	Adjustments [1]	(299,809)
5.	Interest credited	216,273
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$21,067,227**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$322,002	$354,948
Tier 1 General Service	21,891	20,778
Tier 2 Police & Fire	163,401	158,550
Tier 2 General Service	66,757	70,728
Total	**$574,051**	**$605,004**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$567,915	$574,051	$6,136

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$11,692,999	$11,475,128
▪ Tier 1 General Service	278,368	219,301
▪ Tier 2 Police & Fire	4,508,647	4,041,700
▪ Tier 2 General Service	1,092,931	1,011,375
▪ **Total Active Members**	**$17,572,945**	**$16,747,504**
Dormant Members	322,192	254,840
Retired Members and Beneficiaries	13,390,645	12,722,922
Total Actuarial Accrued Liability	**$31,285,782**	**$29,725,265**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$30,977,479	$31,285,782	$308,303

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, 2018	December 31, 2017
1. Actuarial accrued liability	$31,285,782	$29,725,265
2. Actuarial value of assets	21,067,227	21,859,540
3. Unfunded accrued liability *(1. – 2.)*	10,218,555	7,865,725
4. Funded percentage *(2. ÷ 1.)*	67%	74%
5. Combined valuation payroll	$7,495,143	$7,030,648
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	136%	112%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$10,218,555	$676,457
Total				**$10,218,555**	**$676,457**

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, 2017	$29,725,265
b. Normal cost at December 31, 2017 (excluding assumed expenses)	569,961
c. Benefit payments during 2018	(1,117,437)
d. Interest at 7.20% to December 31, 2018	2,120,510
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	31,298,299
f. Change in actuarial accrued liability due to assumption, method, and plan changes	308,303
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	31,606,602
2. Actuarial accrued liability at December 31, 2018	31,285,782
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	320,820
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	21,859,540
b. Contributions for 2018[1]	415,574
c. Benefit payments and expenses during 2018	(1,124,350)
d. Interest at 7.20% to December 31, 2018	1,548,371
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	22,699,134
5. Actuarial value of assets at December 31, 2018	21,067,227
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(1,631,907)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($1,311,087)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$7,865,725**
2. Expected increase	733,440
3. Liability (gain)/loss	(320,820)
4. Asset (gain)/loss	1,631,907
5. Change due to changes in assumptions, methods, and plan provisions	308,303
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$10,218,555**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	$322,002	$1,350,069	23.85%	$354,948	$1,516,902	23.40%
Tier 1 General Service	21,891	133,845	16.36%	20,778	129,032	16.10%
Tier 2 Police & Fire	163,401	837,984	19.50%	158,550	820,240	19.33%
Tier 2 General Service	66,757	582,427	11.46%	70,728	636,384	11.11%
Total	**$574,051**	**$2,904,325**	**19.77%**	**$605,004**	**$3,102,558**	**19.50%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$10,218,555	$7,865,725
2. Next year's Tier 1/Tier 2 UAL payment	676,457	589,526
3. Combined valuation payroll	7,495,143	7,030,648
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	9.03%	8.39%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	19.77%	19.50%
b. Tier 1/Tier 2 UAL rate	9.03%	8.39%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	28.94%	28.04%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	19.14%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	19.14%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.83%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.83%
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.)*	4.98%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	14.16%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	24.12%
7. Advisory July 1, 2021 total pension rate, before adjustment	28.94%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(4.82%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	9.03%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	4.21%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	24.12%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	19.77%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.77%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	24.12%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	19.77%	19.50%
b. Tier 1/Tier 2 UAL rate	4.21%	(0.51%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	24.12%	19.14%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$133,845	$1,350,069	$1,483,914
Tier 2	582,427	837,984	1,420,411
Tier 1/Tier 2 valuation payroll	716,272	2,188,053	2,904,325
OPSRP valuation payroll	3,236,671	1,354,147	4,590,818
Combined valuation payroll	**$3,952,943**	**$3,542,200**	**$7,495,143**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	6	48	55	1	7	44	52
Police & Fire	13	9	16	38	15	9	12	36
Total	14	15	64	93	16	16	56	88
Active Members with previous service segments with the employer								
General Service	0	1	N/A	1	0	1	N/A	1
Police & Fire	7	6	N/A	13	8	6	N/A	14
Total	7	7	N/A	14	8	7	N/A	15
Dormant Members								
General Service	0	1	1	2	0	0	0	0
Police & Fire	2	1	0	3	2	1	0	3
Total	2	2	1	5	2	1	0	3
Retired Members and Beneficiaries								
General Service	6	0	5	11	7	0	5	12
Police & Fire	28	1	0	29	25	1	0	26
Total	34	1	5	40	32	1	5	38
Grand Total Number of Members	**57**	**25**	**70**	**152**	**58**	**25**	**61**	**144**

[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, 2018

	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	3						4
45-49				7	5	1				13
50-54					3	4				7
55-59						2				2
60-64			1							1
65-69		1		1						2
70-74										
75+										
Total	0	1	2	11	8	7	0	0	0	29

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	2	1,021
50-54	2	446
55-59		
60-64		
65-69		
70-74		
75+		
Total	4	734

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49	2	109
50-54	7	2,393
55-59	8	1,942
60-64	8	2,160
65-69	5	2,971
70-74	2	1,732
75-79	2	1,828
80-84		
85-89		
90-94	1	2,614
95-99		
100+		
Total	35	2,125

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

City of Eagle Point/2282
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
City of Eagle Point/2282

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Eagle Point -- #2282

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for City of Eagle Point to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Eagle Point.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for City of Eagle Point

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	18.38%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	10.72%	10.72%	10.72%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**28.41%**	**20.48%**	**24.85%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**28.46%**	**20.48%**	**24.85%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 62%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	21.40%	21.40%
Minimum 2021-2023 Rate	17.12%	12.84%
Maximum 2021-2023 Rate	25.68%	29.96%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$2,361,983	$2,848,056	$486,073	83%	$634,485	77%
12/31/2014	2,394,813	3,386,913	992,100	71%	773,505	128%
12/31/2015	2,329,063	3,480,090	1,151,027	67%	737,638	156%
12/31/2016	2,409,771	3,759,229	1,349,458	64%	802,032	168%
12/31/2017	2,734,964	3,881,486	1,146,522	70%	725,507	158%
12/31/2018	2,650,891	4,260,613	1,609,722	62%	765,039	210%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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 Eagle Point

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$1,609,722	$1,146,522
Allocated pooled OPSRP UAL	138,138	109,327
Side account	0	0
Net unfunded pension actuarial accrued liability	1,747,860	1,255,849
Combined valuation payroll	765,039	725,507
Net pension UAL as a percentage of payroll	228%	173%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($11,214)	($8,313)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$48,937	$70,392
Tier 1/Tier 2 valuation payroll	266,225	387,793
Tier 1/Tier 2 pension normal cost rate	18.38%	18.15%
Tier 1/ Tier 2 Actuarial accrued liability	$4,260,613	$3,881,486
Actuarial asset value	2,650,891	2,734,964
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,609,722	1,146,522
Tier 1/ Tier 2 Funded status	62%	70%
Combined valuation payroll	$765,039	$725,507
Tier 1/Tier 2 UAL as a percentage of payroll	210%	158%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	10.72%	3.25%
Tier 1/Tier 2 active members [1]	3	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, 2018	December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2018	December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	765,039	725,507
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$82,888	$82,338
2. Employer reserves	1,626,633	1,557,097
3. Benefits in force reserve	941,371	1,095,530
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,650,891**	**$2,734,964**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$2,734,964
2.	Regular employer contributions	66,056
3.	Benefit payments and expenses	(206,267)
4.	Adjustments [1]	49,977
5.	Interest credited	6,160
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,650,891**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$15,092	$14,306
Tier 1 General Service	0	0
Tier 2 Police & Fire	33,845	56,086
Tier 2 General Service	0	0
Total	**$48,937**	**$70,392**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$48,906	$48,937	$31

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$267,246	$225,820
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	1,536,797	1,174,188
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$1,804,043**	**$1,400,008**
Dormant Members	0	0
Retired Members and Beneficiaries	2,456,570	2,481,478
Total Actuarial Accrued Liability	**$4,260,613**	**$3,881,486**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$4,268,025	$4,260,613	($7,412)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$4,260,613	$3,881,486
2. Actuarial value of assets	2,650,891	2,734,964
3. Unfunded accrued liability *(1. – 2.)*	1,609,722	1,146,522
4. Funded percentage *(2. ÷ 1.)*	62%	70%
5. Combined valuation payroll	$765,039	$725,507
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	210%	158%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$1,609,722	$106,562
Total				**$1,609,722**	**$106,562**

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, 2017	$3,881,486
b. Normal cost at December 31, 2017 (excluding assumed expenses)	66,323
c. Benefit payments during 2018	(204,998)
d. Interest at 7.20% to December 31, 2018	274,475
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	4,017,286
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(7,412)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	4,009,874
2. Actuarial accrued liability at December 31, 2018	4,260,613
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(250,739)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	2,734,964
b. Contributions for 2018[1]	66,056
c. Benefit payments and expenses during 2018	(206,267)
d. Interest at 7.20% to December 31, 2018	191,870
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	2,786,624
5. Actuarial value of assets at December 31, 2018	2,650,891
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(135,733)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($386,472)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$1,146,522**
2. Expected increase	84,140
3. Liability (gain)/loss	250,739
4. Asset (gain)/loss	135,733
5. Change due to changes in assumptions, methods, and plan provisions	(7,412)
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$1,609,722**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	$15,092	$81,467	18.53%	$14,306	$78,250	18.28%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	33,845	184,758	18.32%	56,086	309,543	18.12%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$48,937**	**$266,225**	**18.38%**	**$70,392**	**$387,793**	**18.15%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$1,609,722	$1,146,522
2. Next year's Tier 1/Tier 2 UAL payment	106,562	90,416
3. Combined valuation payroll	765,039	725,507
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	13.93%	12.46%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	18.38%	18.15%
b. Tier 1/Tier 2 UAL rate	13.93%	12.46%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	32.45%	30.76%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	21.40%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	21.40%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	4.28%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.28%
c. Funded percentage	62%
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.)*	7.70%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	13.70%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	29.10%
7. Advisory July 1, 2021 total pension rate, before adjustment	32.45%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(3.35%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	13.93%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	10.58%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	29.10%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	18.38%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	18.38%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	29.10%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	18.38%	18.15%
b. Tier 1/Tier 2 UAL rate	10.58%	3.10%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	29.10%	21.40%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$81,467	$81,467
Tier 2	0	184,758	184,758
Tier 1/Tier 2 valuation payroll	0	266,225	266,225
OPSRP valuation payroll	0	498,814	498,814
Combined valuation payroll	**$0**	**$765,039**	**$765,039**

Employer Member Census

	December 31							
	2018				2017			
	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	7	10	1	4	5	10
Total	1	2	7	10	1	4	5	10
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	3	N/A	3	0	1	N/A	1
Total	0	3	N/A	3	0	1	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	9	1	1	11	9	1	1	11
Total	9	1	1	11	9	1	1	11
Grand Total Number of Members	**10**	**7**	**8**	**25**	**10**	**7**	**6**	**23**

[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, 2018

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						1				**1**
50-54				1	1					**2**
55-59										
60-64										
65-69										
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, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	1	0
55-59		
60-64		
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	2	1,376
65-69	4	1,416
70-74	2	1,451
75-79	1	3,037
80-84	1	658
85-89		
90-94		
95-99		
100+		
Total	10	1,501

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool's current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

City of Maupin/2283
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
City of Maupin/2283

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Maupin -- #2283

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for City of Maupin to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Maupin.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for City of Maupin

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	17.76%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	0.90%	0.90%	0.90%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**17.97%**	**10.66%**	**15.03%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**18.02%**	**10.66%**	**15.03%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 66%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	14.46%	14.46%
Minimum 2021-2023 Rate	11.46%	8.46%
Maximum 2021-2023 Rate	17.46%	20.46%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$1,015,345	$913,105	($102,240)	111%	$210,414	(49%)
12/31/2014	1,075,329	1,033,338	(41,991)	104%	292,788	(14%)
12/31/2015	881,909	1,247,218	365,309	71%	289,091	126%
12/31/2016	877,001	1,314,029	437,028	67%	312,008	140%
12/31/2017	952,870	1,348,305	395,435	71%	280,082	141%
12/31/2018	911,161	1,381,908	470,747	66%	388,497	121%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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 Maupin

	Actuarial Valuation as of	
	December 31, 2018	December 31, 2017
T1/T2 UAL	$470,747	$395,435
Allocated pooled OPSRP UAL	70,148	42,206
Side account	0	0
Net unfunded pension actuarial accrued liability	540,895	437,641
Combined valuation payroll	388,497	280,082
Net pension UAL as a percentage of payroll	139%	156%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($5,694)	($3,209)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$13,200	$12,840
Tier 1/Tier 2 valuation payroll	74,324	73,161
Tier 1/Tier 2 pension normal cost rate	17.76%	17.55%
Tier 1/ Tier 2 Actuarial accrued liability	$1,381,908	$1,348,305
Actuarial asset value	911,161	952,870
Tier 1/Tier 2 Unfunded actuarial accrued liability	470,747	395,435
Tier 1/ Tier 2 Funded status	66%	71%
Combined valuation payroll	$388,497	$280,082
Tier 1/Tier 2 UAL as a percentage of payroll	121%	141%
Tier 1/Tier 2 UAL rate	0.90%	(3.09%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	2	1
Tier 1/Tier 2 dormant members	0	1
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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	388,497	280,082
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$183,409	$170,346
2. Employer reserves	400,941	404,629
3. Benefits in force reserve	326,811	377,896
4. Total market value of assets ***(1. + 2. + 3.)***	**$911,161**	**$952,870**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$952,870
2.	Regular employer contributions	(4,335)
3.	Benefit payments and expenses	(71,608)
4.	Adjustments [1]	20,419
5.	Interest credited	13,815
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$911,161**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	13,200	12,840
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$13,200**	**$12,840**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$13,203	$13,200	($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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	529,074	481,853
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$529,074**	**$481,853**
Dormant Members	0	10,483
Retired Members and Beneficiaries	852,834	855,969
Total Actuarial Accrued Liability	**$1,381,908**	**$1,348,305**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,374,311	$1,381,908	$7,597

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, 2018	December 31, 2017
1. Actuarial accrued liability	$1,381,908	$1,348,305
2. Actuarial value of assets	911,161	952,870
3. Unfunded accrued liability *(1. – 2.)*	470,747	395,435
4. Funded percentage *(2. ÷ 1.)*	66%	71%
5. Combined valuation payroll	$388,497	$280,082
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	121%	141%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$470,747	$31,163
Total				**$470,747**	**$31,163**

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, 2017	$1,348,305
b. Normal cost at December 31, 2017 (excluding assumed expenses)	12,098
c. Benefit payments during 2018	(71,168)
d. Interest at 7.20% to December 31, 2018	94,951
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,384,187
f. Change in actuarial accrued liability due to assumption, method, and plan changes	7,597
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	1,391,784
2. Actuarial accrued liability at December 31, 2018	1,381,908
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	9,876
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	952,870
b. Contributions for 2018[1]	(4,335)
c. Benefit payments and expenses during 2018	(71,608)
d. Interest at 7.20% to December 31, 2018	65,873
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	942,800
5. Actuarial value of assets at December 31, 2018	911,161
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(31,639)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($21,763)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$395,435**
2. Expected increase	45,951
3. Liability (gain)/loss	(9,876)
4. Asset (gain)/loss	31,639
5. Change due to changes in assumptions, methods, and plan provisions	7,597
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$470,747**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	13,200	74,324	17.76%	12,840	73,161	17.55%
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	**$13,200**	**$74,324**	**17.76%**	**$12,840**	**$73,161**	**17.55%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$470,747	$395,435
2. Next year's Tier 1/Tier 2 UAL payment	31,163	29,216
3. Combined valuation payroll	388,497	280,082
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	8.02%	10.43%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	17.76%	17.55%
b. Tier 1/Tier 2 UAL rate	8.02%	10.43%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	25.92%	28.13%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	14.46%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	14.46%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	2.89%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
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.)*	4.20%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	10.26%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	18.66%
7. Advisory July 1, 2021 total pension rate, before adjustment	25.92%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(7.26%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	8.02%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.76%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	18.66%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.76%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.76%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	18.66%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	17.76%	17.55%
b. Tier 1/Tier 2 UAL rate	0.76%	(3.24%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	18.66%	14.46%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$74,324	$0	$74,324
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	74,324	0	74,324
OPSRP valuation payroll	314,173	0	314,173
Combined valuation payroll	**$388,497**	**$0**	**$388,497**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	0	9	11	1	0	7	8
Police & Fire	0	0	0	0	0	0	0	0
Total	2	0	9	11	1	0	7	8
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	1	1	1	0	1	2
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	1	1	1	0	1	2
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	**7**	**0**	**10**	**17**	**6**	**0**	**8**	**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, 2018

	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+	1									**1**
Total	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

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	1	4,206
60-64		
65-69		
70-74	1	2,003
75-79	1	69
80-84	1	20
85-89		
90-94		
95-99		
100+		
Total	4	1,575

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

City of Molalla/2290
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
City of Molalla/2290

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Molalla -- #2290

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for City of Molalla to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Molalla.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for City of Molalla

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	14.63%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	3.78%	3.78%	3.78%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**17.72%**	**13.54%**	**17.91%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**17.77%**	**13.54%**	**17.91%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 88%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	15.82%	15.82%
Minimum 2021-2023 Rate	12.66%	9.50%
Maximum 2021-2023 Rate	18.98%	22.14%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$13,875,421	$12,370,284	($1,505,137)	112%	$2,645,923	(57%)
12/31/2014	13,818,056	13,985,983	167,927	99%	2,562,585	7%
12/31/2015	12,644,969	13,254,903	609,934	95%	2,667,019	23%
12/31/2016	12,595,542	13,823,729	1,228,187	91%	2,955,866	42%
12/31/2017	13,906,832	14,366,340	459,508	97%	2,736,562	17%
12/31/2018	13,307,304	15,053,559	1,746,254	88%	3,172,408	55%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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 Molalla

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$1,746,255	$459,508
Allocated pooled OPSRP UAL	572,822	412,376
Side account	0	0
Net unfunded pension actuarial accrued liability	2,319,077	871,884
Combined valuation payroll	3,172,408	2,736,562
Net pension UAL as a percentage of payroll	73%	32%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($46,500)	($31,356)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$182,850	$184,345
Tier 1/Tier 2 valuation payroll	1,249,886	1,251,802
Tier 1/Tier 2 pension normal cost rate	14.63%	14.73%
Tier 1/ Tier 2 Actuarial accrued liability	$15,053,559	$14,366,340
Actuarial asset value	13,307,304	13,906,832
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,746,255	459,508
Tier 1/ Tier 2 Funded status	88%	97%
Combined valuation payroll	$3,172,408	$2,736,562
Tier 1/Tier 2 UAL as a percentage of payroll	55%	17%
Tier 1/Tier 2 UAL rate	3.78%	1.09%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	14	15
Tier 1/Tier 2 dormant members	13	17
Tier 1/Tier 2 retirees and beneficiaries	52	49

[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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	3,172,408	2,736,562
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$1,106,561	$1,324,116
2. Employer reserves	8,631,280	8,806,090
3. Benefits in force reserve	3,569,463	3,776,626
4. Total market value of assets ***(1. + 2. + 3.)***	**$13,307,304**	**$13,906,832**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$13,906,832
2. Regular employer contributions	136,587
3. Benefit payments and expenses	(782,117)
4. Adjustments [1]	(22,694)
5. Interest credited	68,697
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$13,307,304**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	29,447	31,356
Tier 2 Police & Fire	89,502	84,236
Tier 2 General Service	63,901	68,753
Total	**$182,850**	**$184,345**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$179,534	$182,850	$3,316

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	491,618	412,955
▪ Tier 2 Police & Fire	2,244,976	1,958,225
▪ Tier 2 General Service	1,446,112	1,287,132
▪ **Total Active Members**	**$4,182,706**	**$3,658,312**
Dormant Members	1,556,098	2,153,615
Retired Members and Beneficiaries	9,314,755	8,554,413
Total Actuarial Accrued Liability	**$15,053,559**	**$14,366,340**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$14,955,550	$15,053,559	$98,009

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, 2018	December 31, 2017
1. Actuarial accrued liability	$15,053,559	$14,366,340
2. Actuarial value of assets	13,307,304	13,906,832
3. Unfunded accrued liability *(1. – 2.)*	1,746,255	459,508
4. Funded percentage *(2. ÷ 1.)*	88%	97%
5. Combined valuation payroll	$3,172,408	$2,736,562
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	55%	17%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$1,746,255	$115,600
Total				**$1,746,255**	**$115,600**

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, 2017	$14,366,340
b. Normal cost at December 31, 2017 (excluding assumed expenses)	173,574
c. Benefit payments during 2018	(777,308)
d. Interest at 7.20% to December 31, 2018	1,012,642
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	14,775,248
f. Change in actuarial accrued liability due to assumption, method, and plan changes	98,009
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	14,873,257
2. Actuarial accrued liability at December 31, 2018	15,053,559
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(180,302)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	13,906,832
b. Contributions for 2018[1]	136,587
c. Benefit payments and expenses during 2018	(782,117)
d. Interest at 7.20% to December 31, 2018	978,053
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	14,239,354
5. Actuarial value of assets at December 31, 2018	13,307,304
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(932,050)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($1,112,352)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$459,508**
2. Expected increase	76,386
3. Liability (gain)/loss	180,302
4. Asset (gain)/loss	932,050
5. Change due to changes in assumptions, methods, and plan provisions	98,009
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$1,746,255**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	29,447	202,452	14.55%	31,356	192,350	16.30%
Tier 2 Police & Fire	89,502	493,348	18.14%	84,236	469,522	17.94%
Tier 2 General Service	63,901	554,086	11.53%	68,753	589,930	11.65%
Total	**$182,850**	**$1,249,886**	**14.63%**	**$184,345**	**$1,251,802**	**14.73%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$1,746,255	$459,508
2. Next year's Tier 1/Tier 2 UAL payment	115,600	25,722
3. Combined valuation payroll	3,172,408	2,736,562
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	3.64%	0.94%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	14.63%	14.73%
b. Tier 1/Tier 2 UAL rate	3.64%	0.94%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	18.41%	15.82%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	15.82%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	15.82%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.16%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.16%
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.)*	3.16%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	12.66%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	18.98%
7. Advisory July 1, 2021 total pension rate, before adjustment	18.41%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	3.64%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.64%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	18.41%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	14.63%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	14.63%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	18.41%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	14.63%	14.73%
b. Tier 1/Tier 2 UAL rate	3.64%	0.94%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	18.41%	15.82%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$202,452	$0	$202,452
Tier 2	554,086	493,348	1,047,434
Tier 1/Tier 2 valuation payroll	756,538	493,348	1,249,886
OPSRP valuation payroll	1,395,634	526,888	1,922,522
Combined valuation payroll	**$2,152,172**	**$1,020,236**	**$3,172,408**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	7	26	35	2	8	20	30
Police & Fire	0	5	7	12	0	5	5	10
Total	2	12	33	47	2	13	25	40
Active Members with previous service segments with the employer								
General Service	2	3	N/A	5	2	2	N/A	4
Police & Fire	0	1	N/A	1	0	1	N/A	1
Total	2	4	N/A	6	2	3	N/A	5
Dormant Members								
General Service	6	6	9	21	7	7	6	20
Police & Fire	1	0	2	3	3	0	1	4
Total	7	6	11	24	10	7	7	24
Retired Members and Beneficiaries								
General Service	27	9	0	36	26	8	0	34
Police & Fire	12	4	0	16	11	4	0	15
Total	39	13	0	52	37	12	0	49
Grand Total Number of Members	**50**	**35**	**44**	**129**	**51**	**35**	**32**	**118**

[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, 2018

	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				4	2					**6**
50-54				1						**1**
55-59			1	1		1	1			**4**
60-64				1						**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**9**	**2**	**1**	**1**	**0**	**0**	**14**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34	1	19
35-39		
40-44	2	965
45-49	1	3
50-54	3	2,421
55-59	2	292
60-64	2	1,563
65-69	2	127
70-74		
75+		
Total	13	1,014

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	6	1,630
60-64	14	839
65-69	7	1,222
70-74	17	1,113
75-79	5	1,406
80-84	2	1,046
85-89	1	1,353
90-94		
95-99		
100+		
Total	52	1,144

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

City of Rainier/2297
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
City of Rainier/2297

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Rainier -- #2297

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for City of Rainier to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Rainier.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for City of Rainier

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	20.92%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	0.68%	0.68%	0.68%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**20.91%**	**10.44%**	**14.81%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**20.96%**	**10.44%**	**14.81%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 69%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	17.71%	17.71%
Minimum 2021-2023 Rate	14.17%	10.63%
Maximum 2021-2023 Rate	21.25%	24.79%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$4,623,898	$4,379,839	($244,059)	106%	$792,879	(31%)
12/31/2014	4,621,424	5,012,677	391,253	92%	954,098	41%
12/31/2015	4,399,799	5,608,244	1,208,445	78%	888,719	136%
12/31/2016	4,272,106	5,720,312	1,448,206	75%	1,012,188	143%
12/31/2017	4,764,176	5,920,890	1,156,713	80%	956,501	121%
12/31/2018	4,386,208	6,342,527	1,956,319	69%	872,761	224%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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 Rainier

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$1,956,319	$1,156,714
Allocated pooled OPSRP UAL	157,589	144,136
Side account	0	0
Net unfunded pension actuarial accrued liability	2,113,908	1,300,850
Combined valuation payroll	872,761	956,501
Net pension UAL as a percentage of payroll	242%	136%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($12,793)	($10,960)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$85,567	$87,932
Tier 1/Tier 2 valuation payroll	409,020	467,440
Tier 1/Tier 2 pension normal cost rate	20.92%	18.81%
Tier 1/ Tier 2 Actuarial accrued liability	$6,342,527	$5,920,890
Actuarial asset value	4,386,208	4,764,176
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,956,319	1,156,714
Tier 1/ Tier 2 Funded status	69%	80%
Combined valuation payroll	$872,761	$956,501
Tier 1/Tier 2 UAL as a percentage of payroll	224%	121%
Tier 1/Tier 2 UAL rate	0.68%	(1.10%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	6	6
Tier 1/Tier 2 dormant members	2	2
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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	872,761	956,501
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$274,796	$350,368
2. Employer reserves	2,439,089	2,739,971
3. Benefits in force reserve	1,672,323	1,673,837
4. Total market value of assets ***(1. + 2. + 3.)***	**$4,386,208**	**$4,764,176**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$4,764,176
2.	Regular employer contributions	55,521
3.	Benefit payments and expenses	(366,428)
4.	Adjustments [1]	(92,458)
5.	Interest credited	25,397
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$4,386,208**

[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, 2018	**December 31, 2017**
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	8,675	0
Tier 2 Police & Fire	71,933	68,678
Tier 2 General Service	4,959	19,254
Total	**$85,567**	**$87,932**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$85,060	$85,567	$507

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	421,843	396,820
▪ Tier 2 Police & Fire	1,370,803	1,185,919
▪ Tier 2 General Service	71,315	439,282
▪ **Total Active Members**	**$1,863,961**	**$2,022,021**
Dormant Members	114,524	107,471
Retired Members and Beneficiaries	4,364,042	3,791,398
Total Actuarial Accrued Liability	**$6,342,527**	**$5,920,890**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$6,298,712	$6,342,527	$43,815

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, 2018	December 31, 2017
1. Actuarial accrued liability	$6,342,527	$5,920,890
2. Actuarial value of assets	4,386,208	4,764,176
3. Unfunded accrued liability *(1. – 2.)*	1,956,319	1,156,714
4. Funded percentage *(2. ÷ 1.)*	69%	80%
5. Combined valuation payroll	$872,761	$956,501
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	224%	121%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$1,956,319	$129,506
Total				**$1,956,319**	**$129,506**

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, 2017	$5,920,890
b. Normal cost at December 31, 2017 (excluding assumed expenses)	82,848
c. Benefit payments during 2018	(364,175)
d. Interest at 7.20% to December 31, 2018	416,176
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	6,055,739
f. Change in actuarial accrued liability due to assumption, method, and plan changes	43,815
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	6,099,554
2. Actuarial accrued liability at December 31, 2018	6,342,527
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(242,973)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	4,764,176
b. Contributions for 2018[1]	55,521
c. Benefit payments and expenses during 2018	(366,428)
d. Interest at 7.20% to December 31, 2018	331,828
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	4,785,097
5. Actuarial value of assets at December 31, 2018	4,386,208
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(398,889)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($641,862)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$1,156,714**
2. Expected increase	113,928
3. Liability (gain)/loss	242,973
4. Asset (gain)/loss	398,889
5. Change due to changes in assumptions, methods, and plan provisions	43,815
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$1,956,319**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	8,675	14,376	60.34%	0	0	0.00%
Tier 2 Police & Fire	71,933	349,862	20.56%	68,678	337,105	20.37%
Tier 2 General Service	4,959	44,782	11.07%	19,254	130,335	14.77%
Total	**$85,567**	**$409,020**	**20.92%**	**$87,932**	**$467,440**	**18.81%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$1,956,319	$1,156,714
2. Next year's Tier 1/Tier 2 UAL payment	129,506	86,585
3. Combined valuation payroll	872,761	956,501
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	14.84%	9.05%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	20.92%	18.81%
b. Tier 1/Tier 2 UAL rate	14.84%	9.05%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	35.90%	28.01%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	17.71%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	17.71%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.54%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.54%
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.)*	3.89%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	13.82%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	21.60%
7. Advisory July 1, 2021 total pension rate, before adjustment	35.90%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(14.30%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	14.84%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.54%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	21.60%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	20.92%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	20.92%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	21.60%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	20.92%	18.81%
b. Tier 1/Tier 2 UAL rate	0.54%	(1.25%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	21.60%	17.71%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$14,376	$0	$14,376
Tier 2	44,782	349,862	394,644
Tier 1/Tier 2 valuation payroll	59,158	349,862	409,020
OPSRP valuation payroll	384,037	79,704	463,741
Combined valuation payroll	**$443,195**	**$429,566**	**$872,761**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	1	8	10	0	2	8	10
Police & Fire	0	4	1	5	0	4	1	5
Total	1	5	9	15	0	6	9	15
Active Members with previous service segments with the employer								
General Service	2	0	N/A	2	2	1	N/A	3
Police & Fire	0	1	N/A	1	0	1	N/A	1
Total	2	1	N/A	3	2	2	N/A	4
Dormant Members								
General Service	1	1	2	4	1	1	0	2
Police & Fire	0	0	0	0	0	0	0	0
Total	1	1	2	4	1	1	0	2
Retired Members and Beneficiaries								
General Service	8	3	1	12	8	1	1	10
Police & Fire	10	0	0	10	10	0	0	10
Total	18	3	1	22	18	1	1	20
Grand Total Number of Members	**22**	**10**	**12**	**44**	**21**	**10**	**10**	**41**

[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, 2018

	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	2					**3**
50-54				2						**2**
55-59			1							**1**
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**3**	**2**	**0**	**0**	**0**	**0**	**6**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	2	510
55-59		
60-64		
65-69		
70-74		
75+		
Total	2	510

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	2	1,487
55-59	1	988
60-64	6	1,280
65-69	4	1,264
70-74	3	2,323
75-79	2	1,105
80-84	1	138
85-89	2	1,150
90-94		
95-99		
100+		
Total	21	1,348

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

City of Gearhart/2309
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
City of Gearhart/2309

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Gearhart -- #2309

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for City of Gearhart to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Gearhart.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for City of Gearhart

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.25%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	2.00%	2.00%	2.00%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**20.56%**	**11.76%**	**16.13%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**20.61%**	**11.76%**	**16.13%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 80%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	17.71%	17.71%
Minimum 2021-2023 Rate	14.17%	10.63%
Maximum 2021-2023 Rate	21.25%	24.79%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$1,831,231	$1,837,530	$6,299	100%	$542,410	1%
12/31/2014	1,926,215	2,250,898	324,683	86%	540,688	60%
12/31/2015	1,947,561	2,437,415	489,854	80%	574,759	85%
12/31/2016	2,071,590	2,654,179	582,589	78%	583,245	100%
12/31/2017	2,434,875	3,039,978	605,102	80%	747,371	81%
12/31/2018	2,493,394	3,100,966	607,572	80%	592,948	102%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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 Gearhart

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$607,572	$605,103
Allocated pooled OPSRP UAL	107,065	112,622
Side account	0	0
Net unfunded pension actuarial accrued liability	714,637	717,725
Combined valuation payroll	592,948	747,371
Net pension UAL as a percentage of payroll	121%	96%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($8,691)	($8,564)

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 the combined valuation payroll 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, 2018	December 31, 2017
Normal cost	$49,081	$75,179
Tier 1/Tier 2 valuation payroll	255,003	414,661
Tier 1/Tier 2 pension normal cost rate	19.25%	18.13%
Tier 1/ Tier 2 Actuarial accrued liability	$3,100,966	$3,039,978
Actuarial asset value	2,493,394	2,434,875
Tier 1/Tier 2 Unfunded actuarial accrued liability	607,572	605,103
Tier 1/ Tier 2 Funded status	80%	80%
Combined valuation payroll	$592,948	$747,371
Tier 1/Tier 2 UAL as a percentage of payroll	102%	81%
Tier 1/Tier 2 UAL rate	2.00%	(0.42%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	4	5
Tier 1/Tier 2 dormant members	0	0
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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	592,948	747,371
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$170,658	$171,316
2. Employer reserves	1,965,037	1,910,286
3. Benefits in force reserve	357,699	353,273
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,493,394**	**$2,434,875**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$2,434,875
2.	Regular employer contributions	50,321
3.	Benefit payments and expenses	(78,377)
4.	Adjustments [1]	77,125
5.	Interest credited	9,449
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,493,394**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$40,987	$39,428
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	21,654
Tier 2 General Service	8,094	14,097
Total	**$49,081**	**$75,179**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$48,348	$49,081	$733

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$1,466,751	$1,445,236
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	470,919	470,521
▪ Tier 2 General Service	229,857	324,024
▪ **Total Active Members**	**$2,167,527**	**$2,239,781**
Dormant Members	0	0
Retired Members and Beneficiaries	933,439	800,197
Total Actuarial Accrued Liability	**$3,100,966**	**$3,039,978**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$3,106,561	$3,100,966	($5,595)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$3,100,966	$3,039,978
2. Actuarial value of assets	2,493,394	2,434,875
3. Unfunded accrued liability *(1. – 2.)*	607,572	605,103
4. Funded percentage *(2. ÷ 1.)*	80%	80%
5. Combined valuation payroll	$592,948	$747,371
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	102%	81%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$607,572	$40,221
Total				**$607,572**	**$40,221**

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, 2017	$3,039,978
b. Normal cost at December 31, 2017 (excluding assumed expenses)	70,832
c. Benefit payments during 2018	(77,895)
d. Interest at 7.20% to December 31, 2018	218,624
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	3,251,539
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(5,595)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	3,245,944
2. Actuarial accrued liability at December 31, 2018	3,100,966
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	144,978
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	2,434,875
b. Contributions for 2018[1]	50,321
c. Benefit payments and expenses during 2018	(78,377)
d. Interest at 7.20% to December 31, 2018	174,301
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	2,581,121
5. Actuarial value of assets at December 31, 2018	2,493,394
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(87,727)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$57,251**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$605,103**
2. Expected increase	65,315
3. Liability (gain)/loss	(144,978)
4. Asset (gain)/loss	87,727
5. Change due to changes in assumptions, methods, and plan provisions	(5,595)
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$607,572**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	$40,987	$179,309	22.86%	$39,428	$186,233	21.17%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	21,654	114,875	18.85%
Tier 2 General Service	8,094	75,694	10.69%	14,097	113,553	12.41%
Total	**$49,081**	**$255,003**	**19.25%**	**$75,179**	**$414,661**	**18.13%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$607,572	$605,103
2. Next year's Tier 1/Tier 2 UAL payment	40,221	45,416
3. Combined valuation payroll	592,948	747,371
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	6.78%	6.08%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	19.25%	18.13%
b. Tier 1/Tier 2 UAL rate	6.78%	6.08%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	26.17%	24.36%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	17.71%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	17.71%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.54%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.54%
c. Funded percentage	80%
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.)*	3.54%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	14.17%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	21.25%
7. Advisory July 1, 2021 total pension rate, before adjustment	26.17%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(4.92%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	6.78%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	1.86%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	21.25%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	19.25%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.25%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	21.25%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	19.25%	18.13%
b. Tier 1/Tier 2 UAL rate	1.86%	(0.57%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	21.25%	17.71%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$179,309	$179,309
Tier 2	75,694	0	75,694
Tier 1/Tier 2 valuation payroll	75,694	179,309	255,003
OPSRP valuation payroll	228,498	109,448	337,945
Combined valuation payroll	**$304,192**	**$288,757**	**$592,948**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	4	5	0	2	6	8
Police & Fire	2	1	2	5	2	1	1	4
Total	2	2	6	10	2	3	7	12
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	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	0	0
Retired Members and Beneficiaries								
General Service	2	1	0	3	2	0	0	2
Police & Fire	0	1	0	1	0	1	0	1
Total	2	2	0	4	2	1	0	3
Grand Total Number of Members	**4**	**4**	**7**	**15**	**4**	**4**	**7**	**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, 2018

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					1					1
50-54										
55-59										
60-64							1			1
65-69				1						1
70-74										
75+										
Total	0	0	0	2	1	0	1	0	0	4

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

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	322
65-69	1	1,898
70-74	2	1,753
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	4	1,432

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Port of Astoria/2507
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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.

December 2019
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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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

ACTUARIAL VALUATION REPORT DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Port of Astoria -- #2507

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Port of Astoria to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Port of Astoria

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	11.77%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	4.07%	4.07%	4.07%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**15.15%**	**13.83%**	**18.20%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**15.20%**	**13.83%**	**18.20%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 84%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	14.19%	14.19%
Minimum 2021-2023 Rate	11.19%	8.19%
Maximum 2021-2023 Rate	17.19%	20.19%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	5,911,834	6,513,794	601,960	91%	1,712,169	35%
12/31/2018	5,488,068	6,542,971	1,054,903	84%	1,776,085	59%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$1,054,903	$601,960
Allocated pooled OPSRP UAL	320,697	258,009
Side account	0	0
Net unfunded pension actuarial accrued liability	1,375,600	859,969
Combined valuation payroll	1,776,085	1,712,169
Net pension UAL as a percentage of payroll	77%	50%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($26,033)	($19,618)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$25,750	$24,590
Tier 1/Tier 2 valuation payroll	218,830	219,336
Tier 1/Tier 2 pension normal cost rate	11.77%	11.21%
Tier 1/ Tier 2 Actuarial accrued liability	$6,542,971	$6,513,794
Actuarial asset value	5,488,068	5,911,834
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,054,903	601,960
Tier 1/ Tier 2 Funded status	84%	91%
Combined valuation payroll	$1,776,085	$1,712,169
Tier 1/Tier 2 UAL as a percentage of payroll	59%	35%
Tier 1/Tier 2 UAL rate	4.07%	2.98%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	4	3
Tier 1/Tier 2 retirees and beneficiaries	33	34

[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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	1,776,085	1,712,169
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$376,781	$361,267
2. Employer reserves	3,032,071	3,135,143
3. Benefits in force reserve	2,079,216	2,415,423
4. Total market value of assets ***(1. + 2. + 3.)***	**$5,488,068**	**$5,911,834**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$5,911,834
2. Regular employer contributions	26,724
3. Benefit payments and expenses	(455,584)
4. Adjustments [1]	(22,538)
5. Interest credited	27,633
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$5,488,068**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	25,750	24,590
Total	**$25,750**	**$24,590**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$24,867	$25,750	$883

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	88,277	466,981
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	456,495	423,925
▪ **Total Active Members**	**$544,772**	**$890,906**
Dormant Members	572,344	151,729
Retired Members and Beneficiaries	5,425,855	5,471,159
Total Actuarial Accrued Liability	**$6,542,971**	**$6,513,794**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$6,539,119	$6,542,971	$3,852

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, 2018	December 31, 2017
1. Actuarial accrued liability	$6,542,971	$6,513,794
2. Actuarial value of assets	5,488,068	5,911,834
3. Unfunded accrued liability *(1. – 2.)*	1,054,903	601,960
4. Funded percentage *(2. ÷ 1.)*	84%	91%
5. Combined valuation payroll	$1,776,085	$1,712,169
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	59%	35%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$1,054,903	$69,833
Total				**$1,054,903**	**$69,833**

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, 2017	$6,513,794
b. Normal cost at December 31, 2017 (excluding assumed expenses)	23,168
c. Benefit payments during 2018	(452,783)
d. Interest at 7.20% to December 31, 2018	453,527
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	6,537,706
f. Change in actuarial accrued liability due to assumption, method, and plan changes	3,852
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	6,541,558
2. Actuarial accrued liability at December 31, 2018	6,542,971
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(1,413)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	5,911,834
b. Contributions for 2018[1]	26,724
c. Benefit payments and expenses during 2018	(455,584)
d. Interest at 7.20% to December 31, 2018	410,213
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	5,893,187
5. Actuarial value of assets at December 31, 2018	5,488,068
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(405,118)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($406,531)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$601,960**
2. Expected increase	42,560
3. Liability (gain)/loss	1,413
4. Asset (gain)/loss	405,118
5. Change due to changes in assumptions, methods, and plan provisions	3,852
6. UAL at December 31, 2018 *(1. + 2. + 3. + 4. + 5.)*	**$1,054,903**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	25,750	218,830	11.77%	24,590	219,336	11.21%
Total	**$25,750**	**$218,830**	**11.77%**	**$24,590**	**$219,336**	**11.21%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$1,054,903	$601,960
2. Next year's Tier 1/Tier 2 UAL payment	69,833	48,393
3. Combined valuation payroll	1,776,085	1,712,169
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	3.93%	2.83%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	11.77%	11.21%
b. Tier 1/Tier 2 UAL rate	3.93%	2.83%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	15.84%	14.19%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	14.19%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	14.19%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	2.84%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	84%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	11.19%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	17.19%
7. Advisory July 1, 2021 total pension rate, before adjustment	15.84%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	3.93%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.93%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	15.84%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.77%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.77%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	15.84%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	11.77%	11.21%
b. Tier 1/Tier 2 UAL rate	3.93%	2.83%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	15.84%	14.19%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	218,830	0	218,830
Tier 1/Tier 2 valuation payroll	218,830	0	218,830
OPSRP valuation payroll	1,557,255	0	1,557,255
Combined valuation payroll	**$1,776,085**	**$0**	**$1,776,085**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	3	31	34	0	3	30	33
Police & Fire	0	0	0	0	0	0	0	0
Total	0	3	31	34	0	3	30	33
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	1	3	8	12	0	3	9	12
Police & Fire	0	0	0	0	0	0	0	0
Total	1	3	8	12	0	3	9	12
Retired Members and Beneficiaries								
General Service	27	4	4	35	28	4	3	35
Police & Fire	2	0	0	2	2	0	0	2
Total	29	4	4	37	30	4	3	37
Grand Total Number of Members	**32**	**11**	**43**	**86**	**33**	**11**	**42**	**86**

[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, 2018

	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				1						1
55-59				1						1
60-64										
65-69										
70-74										
75+										
Total	0	0	0	3	0	0	0	0	0	3

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	1	1,039
55-59	1	2,499
60-64		
65-69	2	204
70-74		
75+		
Total	4	987

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	1	440
55-59	2	37
60-64	5	1,653
65-69	9	961
70-74	7	769
75-79	4	2,255
80-84	3	884
85-89	1	2,824
90-94		
95-99	1	1,690
100+		
Total	33	1,182

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Klamath County Fire District #1/2515
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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.

December 2019
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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Klamath County Fire District #1 -- #2515

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Klamath County Fire District #1 to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Klamath County Fire District #1

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.62%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	26.71%	26.71%	26.71%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**45.64%**	**36.47%**	**40.84%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**45.69%**	**36.47%**	**40.84%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 60%.

Funded Status as of December 31, 2019	**70% to 130%**	**Under 60% or Over 140%**
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	33.27%	33.27%
Minimum 2021-2023 Rate	26.62%	19.97%
Maximum 2021-2023 Rate	39.92%	46.57%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	35,324,652	52,428,517	17,103,865	67%	4,872,723	351%
12/31/2018	31,916,088	53,310,886	21,394,797	60%	5,331,347	401%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$21,394,798	$17,103,865
Allocated pooled OPSRP UAL	962,649	734,276
Side account	0	0
Net unfunded pension actuarial accrued liability	22,357,447	17,838,141
Combined valuation payroll	5,331,347	4,872,723
Net pension UAL as a percentage of payroll	419%	366%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($78,146)	($55,833)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$300,073	$341,250
Tier 1/Tier 2 valuation payroll	1,529,517	1,697,213
Tier 1/Tier 2 pension normal cost rate	19.62%	20.11%
Tier 1/ Tier 2 Actuarial accrued liability	$53,310,886	$52,428,517
Actuarial asset value	31,916,088	35,324,652
Tier 1/Tier 2 Unfunded actuarial accrued liability	21,394,798	17,103,865
Tier 1/ Tier 2 Funded status	60%	67%
Combined valuation payroll	$5,331,347	$4,872,723
Tier 1/Tier 2 UAL as a percentage of payroll	401%	351%
Tier 1/Tier 2 UAL rate	26.71%	13.16%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	15	17
Tier 1/Tier 2 dormant members	5	6
Tier 1/Tier 2 retirees and beneficiaries	81	78

[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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	5,331,347	4,872,723
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$1,653,870	$2,163,278
2. Employer reserves	14,184,671	15,558,019
3. Benefits in force reserve	16,077,547	17,603,355
4. Total market value of assets ***(1. + 2. + 3.)***	**$31,916,088**	**$35,324,652**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$35,324,652
2. Regular employer contributions	711,766
3. Benefit payments and expenses	(3,522,804)
4. Adjustments [1]	(769,209)
5. Interest credited	171,683
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$31,916,088**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$126,399	$173,714
Tier 1 General Service	0	0
Tier 2 Police & Fire	161,254	154,906
Tier 2 General Service	12,420	12,630
Total	**$300,073**	**$341,250**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$297,652	$300,073	$2,421

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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$5,509,873	$7,045,761
▪ Tier 1 General Service	4,849	4,285
▪ Tier 2 Police & Fire	4,685,762	4,130,315
▪ Tier 2 General Service	231,205	204,652
▪ **Total Active Members**	**$10,431,689**	**$11,385,013**
Dormant Members	923,750	1,170,253
Retired Members and Beneficiaries	41,955,447	39,873,251
Total Actuarial Accrued Liability	**$53,310,886**	**$52,428,517**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$53,403,202	$53,310,886	($92,316)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$53,310,886	$52,428,517
2. Actuarial value of assets	31,916,088	35,324,652
3. Unfunded accrued liability *(1. – 2.)*	21,394,798	17,103,865
4. Funded percentage *(2. ÷ 1.)*	60%	67%
5. Combined valuation payroll	$5,331,347	$4,872,723
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	401%	351%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$21,394,798	$1,416,311
Total				**$21,394,798**	**$1,416,311**

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, 2017	$52,428,517
b. Normal cost at December 31, 2017 (excluding assumed expenses)	321,495
c. Benefit payments during 2018	(3,501,143)
d. Interest at 7.20% to December 31, 2018	3,660,386
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	52,909,255
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(92,316)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	52,816,939
2. Actuarial accrued liability at December 31, 2018	53,310,886
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(493,947)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	35,324,652
b. Contributions for 2018[1]	711,766
c. Benefit payments and expenses during 2018	(3,522,804)
d. Interest at 7.20% to December 31, 2018	2,442,178
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	34,955,792
5. Actuarial value of assets at December 31, 2018	31,916,088
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(3,039,703)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($3,533,650)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$17,103,865**
2. Expected increase	849,599
3. Liability (gain)/loss	493,947
4. Asset (gain)/loss	3,039,703
5. Change due to changes in assumptions, methods, and plan provisions	(92,316)
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$21,394,798**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	$126,399	$578,724	21.84%	$173,714	$762,577	22.78%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	161,254	835,396	19.30%	154,906	810,437	19.11%
Tier 2 General Service	12,420	115,397	10.76%	12,630	124,199	10.17%
Total	**$300,073**	**$1,529,517**	**19.62%**	**$341,250**	**$1,697,213**	**20.11%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$21,394,798	$17,103,865
2. Next year's Tier 1/Tier 2 UAL payment	1,416,311	1,324,936
3. Combined valuation payroll	5,331,347	4,872,723
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	26.57%	27.19%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	19.62%	20.11%
b. Tier 1/Tier 2 UAL rate	26.57%	27.19%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	46.33%	47.45%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	33.27%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	33.27%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	6.65%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	6.65%
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.)*	13.30%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	19.97%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	46.57%
7. Advisory July 1, 2021 total pension rate, before adjustment	46.33%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	26.57%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	26.57%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	46.33%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	19.62%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.62%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	46.33%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	19.62%	20.11%
b. Tier 1/Tier 2 UAL rate	26.57%	13.01%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	46.33%	33.27%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$578,724	$578,724
Tier 2	115,397	835,396	950,793
Tier 1/Tier 2 valuation payroll	115,397	1,414,120	1,529,517
OPSRP valuation payroll	778,366	3,023,465	3,801,830
Combined valuation payroll	**$893,763**	**$4,437,585**	**$5,331,347**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	2	16	18	0	2	12	14
Police & Fire	5	8	34	47	7	8	31	46
Total	5	10	50	65	7	10	43	60
Active Members with previous service segments with the employer								
General Service	1	0	N/A	1	1	0	N/A	1
Police & Fire	2	10	N/A	12	3	10	N/A	13
Total	3	10	N/A	13	4	10	N/A	14
Dormant Members								
General Service	0	2	2	4	0	2	2	4
Police & Fire	1	2	2	5	0	4	1	5
Total	1	4	4	9	0	6	3	9
Retired Members and Beneficiaries								
General Service	5	0	0	5	5	0	0	5
Police & Fire	67	9	1	77	66	7	1	74
Total	72	9	1	82	71	7	1	79
Grand Total Number of Members	**81**	**33**	**55**	**169**	**82**	**33**	**47**	**162**

[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, 2018

	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	3	1					**5**
45-49				3	1	1				**5**
50-54				1	2		1			**4**
55-59										
60-64				1						**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**8**	**4**	**1**	**1**	**0**	**0**	**15**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	665
50-54	1	560
55-59	2	2,097
60-64		
65-69	1	412
70-74		
75+		
Total	5	1,166

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49	1	2,215
50-54	4	3,343
55-59	10	3,278
60-64	24	3,366
65-69	18	3,664
70-74	13	2,779
75-79	5	1,220
80-84	4	248
85-89	2	2,901
90-94		
95-99		
100+		
Total	81	3,014

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Clackamas County Housing Authority/2518
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Clackamas County Housing Authority -- #2518

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Clackamas County Housing Authority to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Clackamas County Housing Authority

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	15.07%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	12.88%	12.88%	12.88%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**27.26%**	**22.64%**	**27.01%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**27.31%**	**22.64%**	**27.01%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 74%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	23.76%	23.76%
Minimum 2021-2023 Rate	19.01%	14.26%
Maximum 2021-2023 Rate	28.51%	33.26%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	14,260,653	17,185,657	2,925,004	83%	2,477,654	118%
12/31/2018	13,598,103	18,297,815	4,699,712	74%	2,442,313	192%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$4,699,712	$2,925,004
Allocated pooled OPSRP UAL	440,994	373,360
Side account	0	0
Net unfunded pension actuarial accrued liability	5,140,706	3,298,364
Combined valuation payroll	2,442,313	2,477,654
Net pension UAL as a percentage of payroll	210%	133%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($35,799)	($28,389)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$184,524	$221,596
Tier 1/Tier 2 valuation payroll	1,224,705	1,397,167
Tier 1/Tier 2 pension normal cost rate	15.07%	15.86%
Tier 1/ Tier 2 Actuarial accrued liability	$18,297,815	$17,185,657
Actuarial asset value	13,598,103	14,260,653
Tier 1/Tier 2 Unfunded actuarial accrued liability	4,699,712	2,925,004
Tier 1/ Tier 2 Funded status	74%	83%
Combined valuation payroll	$2,442,313	$2,477,654
Tier 1/Tier 2 UAL as a percentage of payroll	192%	118%
Tier 1/Tier 2 UAL rate	12.88%	7.90%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	19	22
Tier 1/Tier 2 dormant members	6	6
Tier 1/Tier 2 retirees and beneficiaries	49	44

[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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	2,442,313	2,477,654
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$1,401,273	$1,709,660
2. Employer reserves	7,837,037	8,313,064
3. Benefits in force reserve	4,359,793	4,237,929
4. Total market value of assets ***(1. + 2. + 3.)***	**$13,598,103**	**$14,260,653**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$14,260,653
2.	Regular employer contributions	318,215
3.	Benefit payments and expenses	(955,289)
4.	Adjustments [1]	(130,098)
5.	Interest credited	104,621
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$13,598,103**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	64,571	91,287
Tier 2 Police & Fire	0	0
Tier 2 General Service	119,953	130,309
Total	**$184,524**	**$221,596**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$179,542	$184,524	$4,982

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	1,901,831	2,557,201
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	2,858,474	3,024,436
▪ **Total Active Members**	**$4,760,305**	**$5,581,637**
Dormant Members	2,160,336	2,004,712
Retired Members and Beneficiaries	11,377,174	9,599,308
Total Actuarial Accrued Liability	**$18,297,815**	**$17,185,657**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$18,219,966	$18,297,815	$77,849

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, 2018	December 31, 2017
1. Actuarial accrued liability	$18,297,815	$17,185,657
2. Actuarial value of assets	13,598,103	14,260,653
3. Unfunded accrued liability *(1. – 2.)*	4,699,712	2,925,004
4. Funded percentage *(2. ÷ 1.)*	74%	83%
5. Combined valuation payroll	$2,442,313	$2,477,654
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	192%	118%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$4,699,712	$311,116
Total				**$4,699,712**	**$311,116**

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, 2017	$17,185,657
b. Normal cost at December 31, 2017 (excluding assumed expenses)	208,866
c. Benefit payments during 2018	(949,415)
d. Interest at 7.20% to December 31, 2018	1,210,708
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	17,655,816
f. Change in actuarial accrued liability due to assumption, method, and plan changes	77,849
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	17,733,665
2. Actuarial accrued liability at December 31, 2018	18,297,815
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(564,150)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	14,260,653
b. Contributions for 2018[1]	318,215
c. Benefit payments and expenses during 2018	(955,289)
d. Interest at 7.20% to December 31, 2018	1,003,832
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	14,627,412
5. Actuarial value of assets at December 31, 2018	13,598,103
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(1,029,309)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($1,593,459)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$2,925,004**
2. Expected increase	103,400
3. Liability (gain)/loss	564,150
4. Asset (gain)/loss	1,029,309
5. Change due to changes in assumptions, methods, and plan provisions	77,849
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$4,699,712**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	64,571	358,494	18.01%	91,287	458,273	19.92%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	119,953	866,211	13.85%	130,309	938,894	13.88%
Total	**$184,524**	**$1,224,705**	**15.07%**	**$221,596**	**$1,397,167**	**15.86%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$4,699,712	$2,925,004
2. Next year's Tier 1/Tier 2 UAL payment	311,116	234,707
3. Combined valuation payroll	2,442,313	2,477,654
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	12.74%	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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	15.07%	15.86%
b. Tier 1/Tier 2 UAL rate	12.74%	9.47%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	27.95%	25.48%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	23.76%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	23.76%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	4.75%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.75%
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.)*	4.75%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	19.01%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	28.51%
7. Advisory July 1, 2021 total pension rate, before adjustment	27.95%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	12.74%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	12.74%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	27.95%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	15.07%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	15.07%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	27.95%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	15.07%	15.86%
b. Tier 1/Tier 2 UAL rate	12.74%	7.75%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	27.95%	23.76%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$358,494	$0	$358,494
Tier 2	866,211	0	866,211
Tier 1/Tier 2 valuation payroll	1,224,705	0	1,224,705
OPSRP valuation payroll	1,217,608	0	1,217,608
Combined valuation payroll	**$2,442,313**	**$0**	**$2,442,313**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	6	13	20	39	8	14	19	41
Police & Fire	0	0	0	0	0	0	0	0
Total	6	13	20	39	8	14	19	41
Active Members with previous service segments with the employer								
General Service	2	6	N/A	8	2	7	N/A	9
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	2	6	N/A	8	2	7	N/A	9
Dormant Members								
General Service	6	0	7	13	6	0	5	11
Police & Fire	0	0	0	0	0	0	0	0
Total	6	0	7	13	6	0	5	11
Retired Members and Beneficiaries								
General Service	37	12	2	51	34	10	2	46
Police & Fire	0	0	0	0	0	0	0	0
Total	37	12	2	51	34	10	2	46
Grand Total Number of Members	**51**	**31**	**29**	**111**	**50**	**31**	**26**	**107**

[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, 2018

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				2						**2**
50-54				2	2					**4**
55-59				4	2	1	1			**8**
60-64					1					**1**
65-69				1	1		1			**3**
70-74										
75+										
Total	**0**	**0**	**0**	**10**	**6**	**1**	**2**	**0**	**0**	**19**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	3	1,823
55-59	1	2,087
60-64	2	3,605
65-69		
70-74		
75+		
Total	6	2,461

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	1,819
60-64	8	1,928
65-69	9	2,048
70-74	16	1,507
75-79	6	1,044
80-84	6	1,801
85-89	1	278
90-94	1	1,378
95-99	1	6
100+		
Total	49	1,602

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

League of Oregon Cities/2521
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

League of Oregon Cities -- #2521

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for League of Oregon Cities to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for League of Oregon Cities

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	11.66%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	20.38%	20.38%	20.38%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**31.35%**	**30.14%**	**34.51%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**31.40%**	**30.14%**	**34.51%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 54%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	23.65%	23.65%
Minimum 2021-2023 Rate	18.92%	14.19%
Maximum 2021-2023 Rate	28.38%	33.11%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	6,771,920	11,643,476	4,871,556	58%	1,474,373	330%
12/31/2018	6,326,701	11,728,901	5,402,200	54%	1,767,304	306%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$5,402,200	$4,871,556
Allocated pooled OPSRP UAL	319,111	222,175
Side account	0	0
Net unfunded pension actuarial accrued liability	5,721,311	5,093,731
Combined valuation payroll	1,767,304	1,474,373
Net pension UAL as a percentage of payroll	324%	345%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($25,905)	($16,894)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$14,003	$12,938
Tier 1/Tier 2 valuation payroll	120,104	114,428
Tier 1/Tier 2 pension normal cost rate	11.66%	11.31%
Tier 1/ Tier 2 Actuarial accrued liability	$11,728,901	$11,643,476
Actuarial asset value	6,326,701	6,771,920
Tier 1/Tier 2 Unfunded actuarial accrued liability	5,402,200	4,871,556
Tier 1/ Tier 2 Funded status	54%	58%
Combined valuation payroll	$1,767,304	$1,474,373
Tier 1/Tier 2 UAL as a percentage of payroll	306%	330%
Tier 1/Tier 2 UAL rate	20.38%	12.34%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	5	6
Tier 1/Tier 2 retirees and beneficiaries	28	29

[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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	1,767,304	1,474,373
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$536,129	$515,560
2. Employer reserves	2,125,072	2,006,404
3. Benefits in force reserve	3,665,501	4,249,956
4. Total market value of assets *(1. + 2. + 3.)*	**$6,326,701**	**$6,771,920**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$6,771,920
2. Regular employer contributions	93,842
3. Benefit payments and expenses	(803,160)
4. Adjustments [1]	234,997
5. Interest credited	29,102
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$6,326,701**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	14,003	12,938
Total	**$14,003**	**$12,938**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$13,594	$14,003	$409

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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	686,043	630,539
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	1,062,971	984,101
▪ **Total Active Members**	**$1,749,014**	**$1,614,640**
Dormant Members	414,517	402,288
Retired Members and Beneficiaries	9,565,371	9,626,548
Total Actuarial Accrued Liability	**$11,728,901**	**$11,643,476**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$11,781,955	$11,728,901	($53,054)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$11,728,901	$11,643,476
2. Actuarial value of assets	6,326,701	6,771,920
3. Unfunded accrued liability *(1. – 2.)*	5,402,200	4,871,556
4. Funded percentage *(2. ÷ 1.)*	54%	58%
5. Combined valuation payroll	$1,767,304	$1,474,373
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	306%	330%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$5,402,200	$357,620
Total				**$5,402,200**	**$357,620**

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, 2017	$11,643,476
b. Normal cost at December 31, 2017 (excluding assumed expenses)	12,190
c. Benefit payments during 2018	(798,221)
d. Interest at 7.20% to December 31, 2018	810,033
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	11,667,478
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(53,054)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	11,614,424
2. Actuarial accrued liability at December 31, 2018	11,728,901
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(114,477)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	6,771,920
b. Contributions for 2018[1]	93,842
c. Benefit payments and expenses during 2018	(803,160)
d. Interest at 7.20% to December 31, 2018	462,043
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	6,524,645
5. Actuarial value of assets at December 31, 2018	6,326,701
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(197,944)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($312,421)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$4,871,556**
2. Expected increase	271,277
3. Liability (gain)/loss	114,477
4. Asset (gain)/loss	197,944
5. Change due to changes in assumptions, methods, and plan provisions	(53,054)
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$5,402,200**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	14,003	120,104	11.66%	12,938	114,428	11.31%
Total	**$14,003**	**$120,104**	**11.66%**	**$12,938**	**$114,428**	**11.31%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$5,402,200	$4,871,556
2. Next year's Tier 1/Tier 2 UAL payment	357,620	396,743
3. Combined valuation payroll	1,767,304	1,474,373
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	20.24%	26.91%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	11.66%	11.31%
b. Tier 1/Tier 2 UAL rate	20.24%	26.91%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	32.04%	38.37%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	23.65%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	23.65%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	4.73%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.73%
c. Funded percentage	54%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	14.19%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	33.11%
7. Advisory July 1, 2021 total pension rate, before adjustment	32.04%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	20.24%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	20.24%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	32.04%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.66%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.66%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	32.04%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	11.66%	11.31%
b. Tier 1/Tier 2 UAL rate	20.24%	12.19%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	32.04%	23.65%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	120,104	0	120,104
Tier 1/Tier 2 valuation payroll	120,104	0	120,104
OPSRP valuation payroll	1,647,200	0	1,647,200
Combined valuation payroll	**$1,767,304**	**$0**	**$1,767,304**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	18	19	0	1	17	18
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	18	19	0	1	17	18
Active Members with previous service segments with the employer								
General Service	4	8	N/A	12	4	7	N/A	11
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	4	8	N/A	12	4	7	N/A	11
Dormant Members								
General Service	2	3	2	7	2	4	1	7
Police & Fire	0	0	0	0	0	0	0	0
Total	2	3	2	7	2	4	1	7
Retired Members and Beneficiaries								
General Service	27	1	2	30	28	1	1	30
Police & Fire	0	0	0	0	0	0	0	0
Total	27	1	2	30	28	1	1	30
Grand Total Number of Members	**33**	**13**	**22**	**68**	**34**	**13**	**19**	**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, 2018

	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, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	1,036
45-49	2	1,577
50-54	2	572
55-59		
60-64		
65-69		
70-74		
75+		
Total	5	1,067

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	756
60-64	3	2,872
65-69	5	1,783
70-74	12	2,598
75-79	6	1,550
80-84		
85-89	1	7,387
90-94		
95-99		
100+		
Total	28	2,362

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Deschutes Valley Water District/2527
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Deschutes Valley Water District -- #2527

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Deschutes Valley Water District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Deschutes Valley Water District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.89%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	21.97%	21.97%	21.97%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	(9.35%)	(9.35%)	(9.35%)
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**25.82%**	**22.38%**	**26.75%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**25.87%**	**22.38%**	**26.75%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 65%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	27.58%	27.58%
Minimum 2021-2023 Rate	22.06%	16.54%
Maximum 2021-2023 Rate	33.10%	38.62%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	9,645,037	13,986,868	4,341,831	69%	1,427,738	304%
12/31/2018	11,356,808	14,474,929	3,118,121	78%	1,525,087	204%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$5,067,823	$4,341,831
Allocated pooled OPSRP UAL	275,376	215,147
Side account	1,949,703	0
Net unfunded pension actuarial accrued liability	3,393,496	4,556,978
Combined valuation payroll	1,525,087	1,427,738
Net pension UAL as a percentage of payroll	223%	319%
Calculated side account rate relief	(9.35%)	0.00%
Allocated pooled RHIA UAL	($22,354)	($16,359)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$144,408	$136,449
Tier 1/Tier 2 valuation payroll	1,039,310	1,000,521
Tier 1/Tier 2 pension normal cost rate	13.89%	13.64%
Tier 1/ Tier 2 Actuarial accrued liability	$14,474,929	$13,986,868
Actuarial asset value	9,407,106	9,645,037
Tier 1/Tier 2 Unfunded actuarial accrued liability	5,067,823	4,341,831
Tier 1/ Tier 2 Funded status	65%	69%
Combined valuation payroll	$1,525,087	$1,427,738
Tier 1/Tier 2 UAL as a percentage of payroll	332%	304%
Tier 1/Tier 2 UAL rate	21.97%	13.94%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	11	11
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	21	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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018	2,000,000		2,000,000
3. Administrative expenses	(3,000)		(3,000)
4. Amount transferred to employer reserves during 2018	(23,281)		(23,281)
5. Side account earnings during 2018	(24,016)		(24,016)
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$1,949,703**		**$1,949,703**

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
Side account 1	$950,640	$0
Side account 2	999,062	0
Side account 3	0	0
Total	**$1,949,703**	**$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, 2018	December 31, 2017
1. Total side account	$1,949,703	$0
2. Combined valuation payroll	1,525,087	1,427,738
3. Average Amortization factor	13.666	8.312
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	(9.35%)	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, 2018	December 31, 2017
1. Member reserves	$1,071,076	$1,011,775
2. Employer reserves	4,660,626	4,399,197
3. Benefits in force reserve	3,675,403	4,234,065
4. Total market value of assets ***(1. + 2. + 3.)***	**$9,407,106**	**$9,645,037**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$9,645,037
2. Regular employer contributions	241,147
3. Benefit payments and expenses	(805,330)
4. Adjustments [1]	229,462
5. Interest credited	73,508
6. Total transferred from side accounts	23,281
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$9,407,106**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	93,489	88,578
Tier 2 Police & Fire	0	0
Tier 2 General Service	50,919	47,871
Total	**$144,408**	**$136,449**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$141,167	$144,408	$3,241

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	3,577,603	3,231,707
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	1,244,206	1,107,503
▪ **Total Active Members**	**$4,821,809**	**$4,339,210**
Dormant Members	61,909	57,105
Retired Members and Beneficiaries	9,591,212	9,590,553
Total Actuarial Accrued Liability	**$14,474,929**	**$13,986,868**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$14,395,784	$14,474,929	$79,146

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, 2018	December 31, 2017
1. Actuarial accrued liability	$14,474,929	$13,986,868
2. Actuarial value of assets	9,407,106	9,645,037
3. Unfunded accrued liability *(1. – 2.)*	5,067,823	4,341,831
4. Funded percentage *(2. ÷ 1.)*	65%	69%
5. Combined valuation payroll	$1,525,087	$1,427,738
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	332%	304%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$5,067,823	$335,484
Total				**$5,067,823**	**$335,484**

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, 2017	$13,986,868
b. Normal cost at December 31, 2017 (excluding assumed expenses)	128,562
c. Benefit payments during 2018	(800,378)
d. Interest at 7.20% to December 31, 2018	982,869
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	14,297,921
f. Change in actuarial accrued liability due to assumption, method, and plan changes	79,146
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	14,377,067
2. Actuarial accrued liability at December 31, 2018	14,474,929
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(97,863)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	9,645,037
b. Contributions for 2018[1]	264,428
c. Benefit payments and expenses during 2018	(805,330)
d. Interest at 7.20% to December 31, 2018	674,970
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	9,779,106
5. Actuarial value of assets at December 31, 2018	9,407,106
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(372,000)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($469,863)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$4,341,831**
2. Expected increase	176,984
3. Liability (gain)/loss	97,863
4. Asset (gain)/loss	372,000
5. Change due to changes in assumptions, methods, and plan provisions	79,146
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$5,067,823**

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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	93,489	599,661	15.59%	88,578	571,621	15.50%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	50,919	439,649	11.58%	47,871	428,900	11.16%
Total	**$144,408**	**$1,039,310**	**13.89%**	**$136,449**	**$1,000,521**	**13.64%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$5,067,823	$4,341,831
2. Next year's Tier 1/Tier 2 UAL payment	335,484	337,818
3. Combined valuation payroll	1,525,087	1,427,738
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	22.00%	23.66%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	13.89%	13.64%
b. Tier 1/Tier 2 UAL rate	22.00%	23.66%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	36.03%	37.45%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	17.96%
2. Employer contribution rate offset attributable to side accounts	(9.62%)
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	27.58%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	5.52%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	5.52%
c. Funded percentage	65%
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.)*	8.28%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	19.30%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	35.86%
7. Advisory July 1, 2021 total pension rate, before adjustment	36.03%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.17%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	22.00%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	21.83%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	35.86%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.89%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.89%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	35.86%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	13.89%	13.64%
b. Tier 1/Tier 2 UAL rate	21.83%	13.79%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	35.86%	27.58%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$599,661	$0	$599,661
Tier 2	439,649	0	439,649
Tier 1/Tier 2 valuation payroll	1,039,310	0	1,039,310
OPSRP valuation payroll	485,777	0	485,777
Combined valuation payroll	**$1,525,087**	**$0**	**$1,525,087**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	6	5	7	18	6	5	7	18
Police & Fire	0	0	0	0	0	0	0	0
Total	6	5	7	18	6	5	7	18
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	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
Retired Members and Beneficiaries								
General Service	19	2	0	21	19	2	0	21
Police & Fire	0	0	0	0	0	0	0	0
Total	19	2	0	21	19	2	0	21
Grand Total Number of Members	**26**	**7**	**9**	**42**	**26**	**7**	**9**	**42**

[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, 2018

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					2
45-49				2	1	1				4
50-54				2	1					3
55-59								1		1
60-64							1			1
65-69										
70-74										
75+										
Total	0	0	0	4	4	1	1	1	0	11

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

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	361
65-69		
70-74		
75+		
Total	1	361

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	1	3,039
55-59	1	2,691
60-64	4	2,304
65-69	6	3,417
70-74	6	2,534
75-79	2	2,881
80-84		
85-89	1	2,819
90-94		
95-99		
100+		
Total	21	2,821

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool's current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

East Fork Irrigation District/2529
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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

December 2019
East Fork Irrigation District/2529

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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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

ACTUARIAL VALUATION REPORT DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

East Fork Irrigation District -- #2529

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for East Fork Irrigation District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for East Fork Irrigation District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	24.17%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	(5.82%)	(5.82%)	(5.82%)
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**17.66%**	**3.94%**	**8.31%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**17.71%**	**3.94%**	**8.31%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 90%.

Funded Status as of December 31, 2019	**70% to 130%**	**Under 60% or Over 140%**
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	15.29%	15.29%
Minimum 2021-2023 Rate	12.23%	9.17%
Maximum 2021-2023 Rate	18.35%	21.41%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	2,336,383	2,228,172	(108,211)	105%	245,126	(44%)
12/31/2018	2,223,879	2,479,553	255,674	90%	217,430	118%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$255,674	($108,211)
Allocated pooled OPSRP UAL	39,260	36,938
Side account	0	0
Net unfunded pension actuarial accrued liability	294,934	(71,273)
Combined valuation payroll	217,430	245,126
Net pension UAL as a percentage of payroll	136%	(29%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($3,187)	($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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$29,297	$38,995
Tier 1/Tier 2 valuation payroll	121,231	174,598
Tier 1/Tier 2 pension normal cost rate	24.17%	22.33%
Tier 1/ Tier 2 Actuarial accrued liability	$2,479,553	$2,228,172
Actuarial asset value	2,223,879	2,336,383
Tier 1/Tier 2 Unfunded actuarial accrued liability	255,674	(108,211)
Tier 1/ Tier 2 Funded status	90%	105%
Combined valuation payroll	$217,430	$245,126
Tier 1/Tier 2 UAL as a percentage of payroll	118%	(44%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(5.82%)	(7.04%)
Tier 1/Tier 2 active members [1]	3	4
Tier 1/Tier 2 dormant members	3	3
Tier 1/Tier 2 retirees and beneficiaries	5	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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	217,430	245,126
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$721,717	$796,427
2. Employer reserves	1,256,517	1,423,475
3. Benefits in force reserve	245,645	116,481
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,223,879**	**$2,336,383**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$2,336,383
2. Regular employer contributions	15,890
3. Benefit payments and expenses	(53,824)
4. Adjustments [1]	(129,267)
5. Interest credited	54,697
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,223,879**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	22,520	32,383
Tier 2 Police & Fire	0	0
Tier 2 General Service	6,777	6,612
Total	**$29,297**	**$38,995**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$29,154	$29,297	$143

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	1,059,524	1,293,590
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	303,928	279,118
▪ **Total Active Members**	**$1,363,452**	**$1,572,708**
Dormant Members	475,073	391,624
Retired Members and Beneficiaries	641,028	263,841
Total Actuarial Accrued Liability	**$2,479,553**	**$2,228,172**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,476,354	$2,479,553	$3,200

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, 2018	December 31, 2017
1. Actuarial accrued liability	$2,479,553	$2,228,172
2. Actuarial value of assets	2,223,879	2,336,383
3. Unfunded accrued liability *(1. – 2.)*	255,674	(108,211)
4. Funded percentage *(2. ÷ 1.)*	90%	105%
5. Combined valuation payroll	$217,430	$245,126
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	118%	(44%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$255,674	$16,925
Total				**$255,674**	**$16,925**

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, 2017	$2,228,172
b. Normal cost at December 31, 2017 (excluding assumed expenses)	36,741
c. Benefit payments during 2018	(53,493)
d. Interest at 7.20% to December 31, 2018	159,825
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,371,246
f. Change in actuarial accrued liability due to assumption, method, and plan changes	3,200
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	2,374,446
2. Actuarial accrued liability at December 31, 2018	2,479,553
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(105,108)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	2,336,383
b. Contributions for 2018[1]	15,890
c. Benefit payments and expenses during 2018	(53,824)
d. Interest at 7.20% to December 31, 2018	166,854
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	2,465,303
5. Actuarial value of assets at December 31, 2018	2,223,879
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(241,424)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($346,532)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**($108,211)**
2. Expected increase	14,153
3. Liability (gain)/loss	105,108
4. Asset (gain)/loss	241,424
5. Change due to changes in assumptions, methods, and plan provisions	3,200
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$255,674**

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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	22,520	69,700	32.31%	32,383	124,183	26.08%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	6,777	51,531	13.15%	6,612	50,415	13.12%
Total	**$29,297**	**$121,231**	**24.17%**	**$38,995**	**$174,598**	**22.33%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$255,674	($108,211)
2. Next year's Tier 1/Tier 2 UAL payment	16,925	(8,672)
3. Combined valuation payroll	217,430	245,126
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	7.78%	(3.54%)

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	24.17%	22.33%
b. Tier 1/Tier 2 UAL rate	7.78%	(3.54%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	32.09%	18.94%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	15.29%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	15.29%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.06%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.06%
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.)*	3.06%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	12.23%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	18.35%
7. Advisory July 1, 2021 total pension rate, before adjustment	32.09%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(13.74%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	7.78%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(5.96%)
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	18.35%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	24.17%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	24.17%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	18.35%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	24.17%	22.33%
b. Tier 1/Tier 2 UAL rate	(5.96%)	(7.19%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	18.35%	15.29%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$69,700	$0	$69,700
Tier 2	51,531	0	51,531
Tier 1/Tier 2 valuation payroll	121,231	0	121,231
OPSRP valuation payroll	96,199	0	96,199
Combined valuation payroll	**$217,430**	**$0**	**$217,430**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	2	3	6	2	2	2	6
Police & Fire	0	0	0	0	0	0	0	0
Total	1	2	3	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	0	3	2	1	1	4
Police & Fire	0	0	0	0	0	0	0	0
Total	2	1	0	3	2	1	1	4
Retired Members and Beneficiaries								
General Service	4	1	0	5	3	1	0	4
Police & Fire	0	0	0	0	0	0	0	0
Total	4	1	0	5	3	1	0	4
Grand Total Number of Members	**9**	**4**	**3**	**16**	**9**	**4**	**3**	**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, 2018

	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										
70-74				1						**1**
75+										
Total	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**3**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

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	1,828
60-64	1	709
65-69	1	567
70-74		
75+		
Total	3	1,035

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	2,270
65-69	1	1,171
70-74		
75-79		
80-84	2	152
85-89	1	699
90-94		
95-99		
100+		
Total	5	889

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Owyhee Irrigation District/2533
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Owyhee Irrigation District -- #2533

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Owyhee Irrigation District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Owyhee Irrigation District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.43%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	13.68%	13.68%	13.68%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**29.42%**	**23.44%**	**27.81%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**29.47%**	**23.44%**	**27.81%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 71%.

Funded Status as of December 31, 2019	**70% to 130%**	**Under 60% or Over 140%**
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	30.40%	30.40%
Minimum 2021-2023 Rate	24.32%	18.24%
Maximum 2021-2023 Rate	36.48%	42.56%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	7,983,345	10,186,710	2,203,366	78%	1,297,380	170%
12/31/2018	7,444,123	10,423,259	2,979,136	71%	1,456,985	204%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$2,979,136	$2,203,365
Allocated pooled OPSRP UAL	263,079	195,504
Side account	0	0
Net unfunded pension actuarial accrued liability	3,242,215	2,398,869
Combined valuation payroll	1,456,985	1,297,380
Net pension UAL as a percentage of payroll	223%	185%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($21,356)	($14,866)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$86,044	$88,405
Tier 1/Tier 2 valuation payroll	523,675	542,158
Tier 1/Tier 2 pension normal cost rate	16.43%	16.31%
Tier 1/ Tier 2 Actuarial accrued liability	$10,423,259	$10,186,710
Actuarial asset value	7,444,123	7,983,345
Tier 1/Tier 2 Unfunded actuarial accrued liability	2,979,136	2,203,365
Tier 1/ Tier 2 Funded status	71%	78%
Combined valuation payroll	$1,456,985	$1,297,380
Tier 1/Tier 2 UAL as a percentage of payroll	204%	170%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	13.68%	14.09%
Tier 1/Tier 2 active members [1]	9	10
Tier 1/Tier 2 dormant members	1	2
Tier 1/Tier 2 retirees and beneficiaries	33	29

[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, 2018	December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2018	December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	1,456,985	1,297,380
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$841,972	$864,609
2. Employer reserves	3,767,116	3,914,779
3. Benefits in force reserve	2,835,035	3,203,957
4. Total market value of assets *(1. + 2. + 3.)*	**$7,444,123**	**$7,983,345**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$7,983,345
2.	Regular employer contributions	206,749
3.	Benefit payments and expenses	(621,194)
4.	Adjustments [1]	(191,081)
5.	Interest credited	66,305
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)***	**$7,444,123**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	51,671	55,911
Tier 2 Police & Fire	0	0
Tier 2 General Service	34,373	32,494
Total	**$86,044**	**$88,405**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$84,100	$86,044	$1,944

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	1,917,851	1,759,516
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	775,138	707,838
▪ **Total Active Members**	**$2,692,989**	**$2,467,354**
Dormant Members	332,054	462,094
Retired Members and Beneficiaries	7,398,216	7,257,263
Total Actuarial Accrued Liability	**$10,423,259**	**$10,186,710**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$10,402,024	$10,423,259	$21,235

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, 2018	December 31, 2017
1. Actuarial accrued liability	$10,423,259	$10,186,710
2. Actuarial value of assets	7,444,123	7,983,345
3. Unfunded accrued liability *(1. – 2.)*	2,979,136	2,203,365
4. Funded percentage *(2. ÷ 1.)*	71%	78%
5. Combined valuation payroll	$1,456,985	$1,297,380
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	204%	170%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$2,979,136	$197,215
Total				**$2,979,136**	**$197,215**

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, 2017	$10,186,710
b. Normal cost at December 31, 2017 (excluding assumed expenses)	83,183
c. Benefit payments during 2018	(617,374)
d. Interest at 7.20% to December 31, 2018	714,212
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	10,366,732
f. Change in actuarial accrued liability due to assumption, method, and plan changes	21,235
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	10,387,967
2. Actuarial accrued liability at December 31, 2018	10,423,259
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(35,292)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	7,983,345
b. Contributions for 2018[1]	206,749
c. Benefit payments and expenses during 2018	(621,194)
d. Interest at 7.20% to December 31, 2018	559,881
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	8,128,781
5. Actuarial value of assets at December 31, 2018	7,444,123
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(684,657)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($719,949)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$2,203,365**
2. Expected increase	34,587
3. Liability (gain)/loss	35,292
4. Asset (gain)/loss	684,657
5. Change due to changes in assumptions, methods, and plan provisions	21,235
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$2,979,136**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	51,671	284,244	18.18%	55,911	307,483	18.18%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	34,373	239,431	14.36%	32,494	234,675	13.85%
Total	**$86,044**	**$523,675**	**16.43%**	**$88,405**	**$542,158**	**16.31%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$2,979,136	$2,203,365
2. Next year's Tier 1/Tier 2 UAL payment	197,215	180,807
3. Combined valuation payroll	1,456,985	1,297,380
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	13.54%	13.94%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.43%	16.31%
b. Tier 1/Tier 2 UAL rate	13.54%	13.94%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	30.11%	30.40%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	30.40%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	30.40%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	6.08%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	6.08%
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.)*	6.08%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	24.32%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	36.48%
7. Advisory July 1, 2021 total pension rate, before adjustment	30.11%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	13.54%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	13.54%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	30.11%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.43%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.43%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	30.11%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.43%	16.31%
b. Tier 1/Tier 2 UAL rate	13.54%	13.94%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	30.11%	30.40%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$284,244	$0	$284,244
Tier 2	239,431	0	239,431
Tier 1/Tier 2 valuation payroll	523,675	0	523,675
OPSRP valuation payroll	933,310	0	933,310
Combined valuation payroll	**$1,456,985**	**$0**	**$1,456,985**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	5	4	22	31	6	4	20	30
Police & Fire	0	0	0	0	0	0	0	0
Total	5	4	22	31	6	4	20	30
Active Members with previous service segments with the employer								
General Service	2	0	N/A	2	2	1	N/A	3
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	2	0	N/A	2	2	1	N/A	3
Dormant Members								
General Service	1	0	2	3	2	0	2	4
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	2	3	2	0	2	4
Retired Members and Beneficiaries								
General Service	30	3	2	35	27	2	2	31
Police & Fire	0	0	0	0	0	0	0	0
Total	30	3	2	35	27	2	2	31
Grand Total Number of Members	**38**	**7**	**26**	**71**	**37**	**7**	**24**	**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, 2018

	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	2	1			**4**
60-64				2		1				**3**
65-69					1					**1**
70-74										
75+										
Total	**0**	**0**	**0**	**3**	**2**	**3**	**1**	**0**	**0**	**9**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

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	2,100
65-69		
70-74		
75+		
Total	1	2,100

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	3	1,537
60-64	3	1,334
65-69	5	1,723
70-74	7	1,907
75-79	4	2,602
80-84	7	985
85-89	4	1,267
90-94		
95-99		
100+		
Total	33	1,604

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Valley View Cemetery/2536
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Valley View Cemetery -- #2536

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Valley View Cemetery to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Valley View Cemetery

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.89%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	(15.94%)	(15.94%)	(15.94%)
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**5.26%**	**0.00%**	**0.00%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**5.31%**	**0.00%**	**0.00%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 820%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	5.94%	5.94%
Minimum 2021-2023 Rate	2.94%	0.00%
Maximum 2021-2023 Rate	8.94%	11.94%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%)
12/31/2017	146,282	15,704	(130,578)	931%	46,202	(283%)
12/31/2018	142,411	17,374	(125,036)	820%	51,471	(243%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	($125,037)	($130,578)
Allocated pooled OPSRP UAL	9,294	6,962
Side account	0	0
Net unfunded pension actuarial accrued liability	(115,743)	(123,616)
Combined valuation payroll	51,471	46,202
Net pension UAL as a percentage of payroll	(225%)	(268%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($754)	($529)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$1,479	$1,370
Tier 1/Tier 2 valuation payroll	8,624	8,133
Tier 1/Tier 2 pension normal cost rate	21.89%	22.78%
Tier 1/ Tier 2 Actuarial accrued liability	$17,374	$15,704
Actuarial asset value	142,411	146,282
Tier 1/Tier 2 Unfunded actuarial accrued liability	(125,037)	(130,578)
Tier 1/ Tier 2 Funded status	820%	931%
Combined valuation payroll	$51,471	$46,202
Tier 1/Tier 2 UAL as a percentage of payroll	(243%)	(283%)
Tier 1/Tier 2 UAL rate	(15.94%)	(16.84%)
(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	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, 2018	December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2018	December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	51,471	46,202
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$0	$0
2. Employer reserves	139,603	143,038
3. Benefits in force reserve	2,808	3,244
4. Total market value of assets ***(1. + 2. + 3.)***	**$142,411**	**$146,282**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$146,282
2.	Regular employer contributions	(3,736)
3.	Benefit payments and expenses	(615)
4.	Adjustments [1]	152
5.	Interest credited	327
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$142,411**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	1,479	1,370
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$1,479**	**$1,370**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$1,472	$1,479	$7

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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	10,048	8,355
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$10,048**	**$8,355**
Dormant Members	0	0
Retired Members and Beneficiaries	7,326	7,349
Total Actuarial Accrued Liability	**$17,374**	**$15,704**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$16,571	$17,374	$803

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, 2018	December 31, 2017
1. Actuarial accrued liability	$17,374	$15,704
2. Actuarial value of assets	142,411	146,282
3. Unfunded accrued liability *(1. – 2.)*	(125,037)	(130,578)
4. Funded percentage *(2. ÷ 1.)*	820%	931%
5. Combined valuation payroll	$51,471	$46,202
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(243%)	(283%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	($125,037)	($8,277)
Total				**($125,037)**	**($8,277)**

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, 2017	$15,704
b. Normal cost at December 31, 2017 (excluding assumed expenses)	1,370
c. Benefit payments during 2018	(611)
d. Interest at 7.20% to December 31, 2018	1,158
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	17,621
f. Change in actuarial accrued liability due to assumption, method, and plan changes	803
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	18,424
2. Actuarial accrued liability at December 31, 2018	17,374
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	1,050
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	146,282
b. Contributions for 2018[1]	(3,736)
c. Benefit payments and expenses during 2018	(615)
d. Interest at 7.20% to December 31, 2018	10,376
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	152,307
5. Actuarial value of assets at December 31, 2018	142,411
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(9,897)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($8,847)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**($130,578)**
2. Expected increase	(4,109)
3. Liability (gain)/loss	(1,050)
4. Asset (gain)/loss	9,897
5. Change due to changes in assumptions, methods, and plan provisions	803
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**($125,037)**

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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	1,479	8,624	17.15%	1,370	8,133	16.84%
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	**$1,479**	**$8,624**	**17.15%**	**$1,370**	**$8,133**	**16.84%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	($125,037)	($130,578)
2. Next year's Tier 1/Tier 2 UAL payment	(8,277)	(10,559)
3. Combined valuation payroll	51,471	46,202
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(16.08%)	(22.85%)

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	17.15%	16.84%
b. Tier 1/Tier 2 UAL rate	(16.08%)	(22.85%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	1.21%	(5.86%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	5.94%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	5.94%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	1.19%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	820%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	0.00%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	11.94%
7. Advisory July 1, 2021 total pension rate, before adjustment	1.21%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	(16.08%)
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(16.08%)
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	1.21%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	4.74%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.15%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.89%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	5.95%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	21.89%	22.78%
b. Tier 1/Tier 2 UAL rate	(16.08%)	(16.99%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	5.95%	5.94%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$8,624	$0	$8,624
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	8,624	0	8,624
OPSRP valuation payroll	42,847	0	42,847
Combined valuation payroll	**$51,471**	**$0**	**$51,471**

Employer Member Census

	December 31							
	2018				2017			
	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	1	1	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	1	1	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**	**3**	**5**	**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, 2018

	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, 2018

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	1	52
90-94		
95-99		
100+		
Total	1	52

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool's current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Nyssa Road Assessment District #2/2550
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Nyssa Road Assessment District #2 -- #2550

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Nyssa Road Assessment District #2 to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Nyssa Road Assessment District #2

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.66%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	15.26%	15.26%	15.26%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**28.23%**	**25.02%**	**29.39%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**28.28%**	**25.02%**	**29.39%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 74%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	27.82%	27.82%
Minimum 2021-2023 Rate	22.26%	16.70%
Maximum 2021-2023 Rate	33.38%	38.94%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	1,454,621	1,651,511	196,890	88%	235,240	84%
12/31/2018	1,286,733	1,729,852	443,119	74%	194,029	228%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$443,119	$196,890
Allocated pooled OPSRP UAL	35,035	35,449
Side account	0	0
Net unfunded pension actuarial accrued liability	478,154	232,339
Combined valuation payroll	194,029	235,241
Net pension UAL as a percentage of payroll	246%	99%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($2,844)	($2,695)

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 the combined valuation payroll 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, 2018	December 31, 2017
Normal cost	$8,582	$28,189
Tier 1/Tier 2 valuation payroll	62,822	146,404
Tier 1/Tier 2 pension normal cost rate	13.66%	19.25%
Tier 1/ Tier 2 Actuarial accrued liability	$1,729,852	$1,651,511
Actuarial asset value	1,286,733	1,454,621
Tier 1/Tier 2 Unfunded actuarial accrued liability	443,119	196,890
Tier 1/ Tier 2 Funded status	74%	88%
Combined valuation payroll	$194,029	$235,241
Tier 1/Tier 2 UAL as a percentage of payroll	228%	84%
Tier 1/Tier 2 UAL rate	15.26%	8.57%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	1	3
Tier 1/Tier 2 dormant members	1	2
Tier 1/Tier 2 retirees and beneficiaries	7	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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	194,029	235,241
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$68,752	$344,650
2. Employer reserves	656,098	794,137
3. Benefits in force reserve	561,883	315,834
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,286,733**	**$1,454,621**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$1,454,621
2.	Regular employer contributions	54,834
3.	Benefit payments and expenses	(123,116)
4.	Adjustments [1]	(114,406)
5.	Interest credited	14,800
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,286,733**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	20,049
Tier 2 Police & Fire	0	0
Tier 2 General Service	8,582	8,140
Total	**$8,582**	**$28,189**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$8,390	$8,582	$192

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	570,191
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	104,093	82,999
▪ **Total Active Members**	**$104,093**	**$653,190**
Dormant Members	159,487	282,928
Retired Members and Beneficiaries	1,466,272	715,393
Total Actuarial Accrued Liability	**$1,729,852**	**$1,651,511**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,734,397	$1,729,852	($4,545)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$1,729,852	$1,651,511
2. Actuarial value of assets	1,286,733	1,454,621
3. Unfunded accrued liability *(1. – 2.)*	443,119	196,890
4. Funded percentage *(2. ÷ 1.)*	74%	88%
5. Combined valuation payroll	$194,029	$235,241
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	228%	84%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$443,119	$29,334
Total				**$443,119**	**$29,334**

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, 2017	$1,651,511
b. Normal cost at December 31, 2017 (excluding assumed expenses)	26,559
c. Benefit payments during 2018	(122,359)
d. Interest at 7.20% to December 31, 2018	115,460
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,671,171
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(4,545)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	1,666,626
2. Actuarial accrued liability at December 31, 2018	1,729,852
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(63,226)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	1,454,621
b. Contributions for 2018[1]	54,834
c. Benefit payments and expenses during 2018	(123,116)
d. Interest at 7.20% to December 31, 2018	102,275
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	1,488,613
5. Actuarial value of assets at December 31, 2018	1,286,733
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(201,880)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($265,106)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$196,890**
2. Expected increase	(14,332)
3. Liability (gain)/loss	63,226
4. Asset (gain)/loss	201,880
5. Change due to changes in assumptions, methods, and plan provisions	(4,545)
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$443,119**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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%	20,049	85,801	23.37%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	8,582	62,822	13.66%	8,140	60,603	13.43%
Total	**$8,582**	**$62,822**	**13.66%**	**$28,189**	**$146,404**	**19.25%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$443,119	$196,890
2. Next year's Tier 1/Tier 2 UAL payment	29,334	18,796
3. Combined valuation payroll	194,029	235,241
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	15.12%	7.99%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	13.66%	19.25%
b. Tier 1/Tier 2 UAL rate	15.12%	7.99%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	28.92%	27.39%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	27.82%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	27.82%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	5.56%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	5.56%
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.)*	5.56%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	22.26%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	33.38%
7. Advisory July 1, 2021 total pension rate, before adjustment	28.92%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	15.12%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	15.12%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	28.92%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.66%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.66%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	28.92%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	13.66%	19.25%
b. Tier 1/Tier 2 UAL rate	15.12%	8.42%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	28.92%	27.82%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	62,822	0	62,822
Tier 1/Tier 2 valuation payroll	62,822	0	62,822
OPSRP valuation payroll	131,207	0	131,207
Combined valuation payroll	**$194,029**	**$0**	**$194,029**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	3	4	2	1	2	5
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	3	4	2	1	2	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	1	0	1	2	2	0	1	3
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	1	2	2	0	1	3
Retired Members and Beneficiaries								
General Service	7	0	0	7	4	0	0	4
Police & Fire	0	0	0	0	0	0	0	0
Total	7	0	0	7	4	0	0	4
Grand Total Number of Members	**8**	**1**	**4**	**13**	**8**	**1**	**3**	**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, 2018

	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, 2018

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	1,002
65-69		
70-74		
75+		
Total	1	1,002

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	702
60-64		
65-69	3	1,428
70-74		
75-79		
80-84	1	218
85-89	1	6,942
90-94	1	182
95-99		
100+		
Total	7	1,761

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool's current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Jackson County Fire District #5/2556
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Jackson County Fire District #5 -- #2556

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Jackson County Fire District #5 to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Jackson County Fire District #5

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.04%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	20.99%	20.99%	20.99%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**41.34%**	**30.75%**	**35.12%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**41.39%**	**30.75%**	**35.12%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 60%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	30.74%	30.74%
Minimum 2021-2023 Rate	24.59%	18.44%
Maximum 2021-2023 Rate	36.89%	43.04%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	14,356,262	22,187,426	7,831,164	65%	2,524,540	310%
12/31/2018	13,756,321	22,841,459	9,085,138	60%	2,884,481	315%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$9,085,138	$7,831,164
Allocated pooled OPSRP UAL	520,833	380,426
Side account	0	0
Net unfunded pension actuarial accrued liability	9,605,971	8,211,590
Combined valuation payroll	2,884,481	2,524,540
Net pension UAL as a percentage of payroll	333%	325%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($42,280)	($28,927)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$237,365	$224,255
Tier 1/Tier 2 valuation payroll	1,128,319	1,050,043
Tier 1/Tier 2 pension normal cost rate	21.04%	21.36%
Tier 1/ Tier 2 Actuarial accrued liability	$22,841,459	$22,187,426
Actuarial asset value	13,756,321	14,356,262
Tier 1/Tier 2 Unfunded actuarial accrued liability	9,085,138	7,831,164
Tier 1/ Tier 2 Funded status	60%	65%
Combined valuation payroll	$2,884,481	$2,524,540
Tier 1/Tier 2 UAL as a percentage of payroll	315%	310%
Tier 1/Tier 2 UAL rate	20.99%	9.38%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	10	10
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	30	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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	2,884,481	2,524,540
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$1,005,156	$978,664
2. Employer reserves	6,523,246	6,181,744
3. Benefits in force reserve	6,227,919	7,195,854
4. Total market value of assets ***(1. + 2. + 3.)***	**$13,756,321**	**$14,356,262**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$14,356,262
2.	Regular employer contributions	309,594
3.	Benefit payments and expenses	(1,364,620)
4.	Adjustments [1]	373,157
5.	Interest credited	81,929
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$13,756,321**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$83,240	$78,849
Tier 1 General Service	0	0
Tier 2 Police & Fire	154,125	145,406
Tier 2 General Service	0	0
Total	**$237,365**	**$224,255**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$237,273	$237,365	$92

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$3,300,654	$3,061,912
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	3,134,535	2,682,153
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$6,435,189**	**$5,744,065**
Dormant Members	154,092	144,077
Retired Members and Beneficiaries	16,252,178	16,299,284
Total Actuarial Accrued Liability	**$22,841,459**	**$22,187,426**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$22,923,823	$22,841,459	($82,364)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$22,841,459	$22,187,426
2. Actuarial value of assets	13,756,321	14,356,262
3. Unfunded accrued liability *(1. – 2.)*	9,085,138	7,831,164
4. Funded percentage *(2. ÷ 1.)*	60%	65%
5. Combined valuation payroll	$2,884,481	$2,524,540
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	315%	310%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$9,085,138	$601,426
Total				**$9,085,138**	**$601,426**

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, 2017	$22,187,426
b. Normal cost at December 31, 2017 (excluding assumed expenses)	211,271
c. Benefit payments during 2018	(1,356,229)
d. Interest at 7.20% to December 31, 2018	1,556,276
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	22,598,744
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(82,364)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	22,516,380
2. Actuarial accrued liability at December 31, 2018	22,841,459
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(325,079)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	14,356,262
b. Contributions for 2018[1]	309,594
c. Benefit payments and expenses during 2018	(1,364,620)
d. Interest at 7.20% to December 31, 2018	995,670
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	14,296,905
5. Actuarial value of assets at December 31, 2018	13,756,321
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(540,584)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($865,663)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$7,831,164**
2. Expected increase	470,675
3. Liability (gain)/loss	325,079
4. Asset (gain)/loss	540,584
5. Change due to changes in assumptions, methods, and plan provisions	(82,364)
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$9,085,138**

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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	$83,240	$339,853	24.49%	$78,849	$308,044	25.60%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	154,125	788,466	19.55%	145,406	741,999	19.60%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$237,365**	**$1,128,319**	**21.04%**	**$224,255**	**$1,050,043**	**21.36%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$9,085,138	$7,831,164
2. Next year's Tier 1/Tier 2 UAL payment	601,426	598,266
3. Combined valuation payroll	2,884,481	2,524,540
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	20.85%	23.70%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	21.04%	21.36%
b. Tier 1/Tier 2 UAL rate	20.85%	23.70%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	42.03%	45.21%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	30.74%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	30.74%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	6.15%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	6.15%
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.)*	12.30%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	18.44%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	43.04%
7. Advisory July 1, 2021 total pension rate, before adjustment	42.03%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	20.85%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	20.85%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	42.03%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	21.04%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.04%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	42.03%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	21.04%	21.36%
b. Tier 1/Tier 2 UAL rate	20.85%	9.23%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	42.03%	30.74%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$339,853	$339,853
Tier 2	0	788,466	788,466
Tier 1/Tier 2 valuation payroll	0	1,128,319	1,128,319
OPSRP valuation payroll	24,858	1,731,303	1,756,162
Combined valuation payroll	**$24,858**	**$2,859,622**	**$2,884,481**

Employer Member Census

	December 31							
	2018				2017			
	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	16	26	3	7	16	26
Total	3	7	17	27	3	7	17	27
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	1	1	N/A	2
Total	0	1	N/A	1	1	1	N/A	2
Dormant Members								
General Service	0	0	1	1	0	0	1	1
Police & Fire	0	1	0	1	0	1	0	1
Total	0	1	1	2	0	1	1	2
Retired Members and Beneficiaries								
General Service	3	0	0	3	3	0	0	3
Police & Fire	27	0	0	27	25	0	0	25
Total	30	0	0	30	28	0	0	28
Grand Total Number of Members	**33**	**9**	**18**	**60**	**32**	**9**	**18**	**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, 2018

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						**2**
45-49			1		1					**2**
50-54				2						**2**
55-59					1	2				**3**
60-64								1		**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**4**	**2**	**2**	**0**	**1**	**0**	**10**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

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	2	188
55-59	7	4,060
60-64	2	3,680
65-69	12	3,861
70-74	4	2,782
75-79	2	2,211
80-84		
85-89		
90-94		
95-99		
100+		
Total	30	3,296

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool's current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Port of St Helens/2570
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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

ACTUARIAL VALUATION REPORT DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Port of St Helens -- #2570

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Port of St Helens to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Port of St Helens

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	12.07%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	0.59%	0.59%	0.59%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**11.97%**	**10.35%**	**14.72%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**12.02%**	**10.35%**	**14.72%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 97%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	9.83%	9.83%
Minimum 2021-2023 Rate	6.83%	3.83%
Maximum 2021-2023 Rate	12.83%	15.83%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	2,320,581	2,159,686	(160,895)	107%	789,073	(20%)
12/31/2018	2,155,140	2,231,214	76,074	97%	1,114,830	7%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$76,074	($160,895)
Allocated pooled OPSRP UAL	201,298	118,906
Side account	0	0
Net unfunded pension actuarial accrued liability	277,372	(41,989)
Combined valuation payroll	1,114,830	789,073
Net pension UAL as a percentage of payroll	25%	(5%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($16,341)	($9,041)

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 the combined valuation payroll 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, 2018	December 31, 2017
Normal cost	$14,787	$14,270
Tier 1/Tier 2 valuation payroll	122,461	126,274
Tier 1/Tier 2 pension normal cost rate	12.07%	11.30%
Tier 1/ Tier 2 Actuarial accrued liability	$2,231,214	$2,159,686
Actuarial asset value	2,155,140	2,320,581
Tier 1/Tier 2 Unfunded actuarial accrued liability	76,074	(160,895)
Tier 1/ Tier 2 Funded status	97%	107%
Combined valuation payroll	$1,114,830	$789,073
Tier 1/Tier 2 UAL as a percentage of payroll	7%	(20%)
Tier 1/Tier 2 UAL rate	0.59%	(1.47%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	3	3
Tier 1/Tier 2 retirees and beneficiaries	5	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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	1,114,830	789,073
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$162,445	$226,328
2. Employer reserves	1,417,233	1,535,572
3. Benefits in force reserve	575,461	558,681
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,155,140**	**$2,320,581**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$2,320,581
2.	Regular employer contributions	14,467
3.	Benefit payments and expenses	(126,091)
4.	Adjustments [1]	(60,255)
5.	Interest credited	6,438
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,155,140**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	14,787	14,270
Total	**$14,787**	**$14,270**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$14,074	$14,787	$713

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	163,895	156,056
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	228,261	411,952
▪ **Total Active Members**	**$392,156**	**$568,008**
Dormant Members	337,353	326,212
Retired Members and Beneficiaries	1,501,704	1,265,466
Total Actuarial Accrued Liability	**$2,231,214**	**$2,159,686**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,215,211	$2,231,214	$16,003

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, 2018	December 31, 2017
1. Actuarial accrued liability	$2,231,214	$2,159,686
2. Actuarial value of assets	2,155,140	2,320,581
3. Unfunded accrued liability *(1. – 2.)*	76,074	(160,895)
4. Funded percentage *(2. ÷ 1.)*	97%	107%
5. Combined valuation payroll	$1,114,830	$789,073
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	7%	(20%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$76,074	$5,036
Total				**$76,074**	**$5,036**

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, 2017	$2,159,686
b. Normal cost at December 31, 2017 (excluding assumed expenses)	13,445
c. Benefit payments during 2018	(125,316)
d. Interest at 7.20% to December 31, 2018	151,470
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,199,285
f. Change in actuarial accrued liability due to assumption, method, and plan changes	16,003
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	2,215,288
2. Actuarial accrued liability at December 31, 2018	2,231,214
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(15,926)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	2,320,581
b. Contributions for 2018[1]	14,467
c. Benefit payments and expenses during 2018	(126,091)
d. Interest at 7.20% to December 31, 2018	163,063
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	2,372,020
5. Actuarial value of assets at December 31, 2018	2,155,140
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(216,880)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($232,806)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**($160,895)**
2. Expected increase	(11,840)
3. Liability (gain)/loss	15,926
4. Asset (gain)/loss	216,880
5. Change due to changes in assumptions, methods, and plan provisions	16,003
6. UAL at December 31, 2018 *(1. + 2. + 3. + 4. + 5.)*	**$76,074**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	14,787	122,461	12.07%	14,270	126,274	11.30%
Total	**$14,787**	**$122,461**	**12.07%**	**$14,270**	**$126,274**	**11.30%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$76,074	($160,895)
2. Next year's Tier 1/Tier 2 UAL payment	5,036	(12,802)
3. Combined valuation payroll	1,114,830	789,073
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.45%	(1.62%)

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	12.07%	11.30%
b. Tier 1/Tier 2 UAL rate	0.45%	(1.62%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	12.66%	9.83%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	9.83%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	9.83%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	1.97%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	97%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	6.83%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	12.83%
7. Advisory July 1, 2021 total pension rate, before adjustment	12.66%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	0.45%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.45%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	12.66%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	12.07%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	12.07%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	12.66%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	12.07%	11.30%
b. Tier 1/Tier 2 UAL rate	0.45%	(1.62%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	12.66%	9.83%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	122,461	0	122,461
Tier 1/Tier 2 valuation payroll	122,461	0	122,461
OPSRP valuation payroll	992,369	0	992,369
Combined valuation payroll	**$1,114,830**	**$0**	**$1,114,830**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	15	16	0	1	12	13
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	15	16	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	3	1	4	0	3	1	4
Police & Fire	0	0	0	0	0	0	0	0
Total	0	3	1	4	0	3	1	4
Retired Members and Beneficiaries								
General Service	3	2	1	6	3	1	1	5
Police & Fire	0	0	0	0	0	0	0	0
Total	3	2	1	6	3	1	1	5
Grand Total Number of Members	**4**	**7**	**17**	**28**	**4**	**7**	**14**	**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, 2018

	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, 2018

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	600
60-64	2	738
65-69		
70-74		
75+		
Total	3	692

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	1,351
65-69	1	6,139
70-74		
75-79	1	1,864
80-84		
85-89	2	495
90-94		
95-99		
100+		
Total	5	2,069

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool's current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Jefferson County Rural Fire Protection District #1/2575
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Jefferson County Rural Fire Protection District #1 -- #2575

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Jefferson County Rural Fire Protection District #1 to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Jefferson County Rural Fire Protection District #1

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.01%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	7.11%	7.11%	7.11%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**22.43%**	**16.87%**	**21.24%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**22.48%**	**16.87%**	**21.24%**

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.*

[2] *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

[3] *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 81%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	19.27%	19.27%
Minimum 2021-2023 Rate	15.42%	11.57%
Maximum 2021-2023 Rate	23.12%	26.97%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	1,950,646	2,284,841	334,195	85%	469,828	71%
12/31/2018	1,855,678	2,281,087	425,409	81%	401,938	106%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$425,409	$334,195
Allocated pooled OPSRP UAL	72,575	70,799
Side account	0	0
Net unfunded pension actuarial accrued liability	497,984	404,994
Combined valuation payroll	401,938	469,828
Net pension UAL as a percentage of payroll	124%	86%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($5,892)	($5,383)

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 the combined valuation payroll 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, 2018	December 31, 2017
Normal cost	$10,323	$11,109
Tier 1/Tier 2 valuation payroll	64,466	70,389
Tier 1/Tier 2 pension normal cost rate	16.01%	15.78%
Tier 1/ Tier 2 Actuarial accrued liability	$2,281,087	$2,284,841
Actuarial asset value	1,855,678	1,950,646
Tier 1/Tier 2 Unfunded actuarial accrued liability	425,409	334,195
Tier 1/ Tier 2 Funded status	81%	85%
Combined valuation payroll	$401,938	$469,828
Tier 1/Tier 2 UAL as a percentage of payroll	106%	71%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	7.11%	3.49%
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	1	1
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, 2018	December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2018	December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	401,938	469,828
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$77,664	$73,929
2. Employer reserves	1,063,372	1,047,218
3. Benefits in force reserve	714,642	829,499
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,855,678**	**$1,950,646**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$1,950,646
2.	Regular employer contributions	13,776
3.	Benefit payments and expenses	(156,587)
4.	Adjustments [1]	40,346
5.	Interest credited	7,498
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,855,678**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	10,323	11,109
Tier 2 General Service	0	0
Total	**$10,323**	**$11,109**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$10,355	$10,323	($32)

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	211,913	212,149
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$211,913**	**$212,149**
Dormant Members	204,269	193,799
Retired Members and Beneficiaries	1,864,905	1,878,893
Total Actuarial Accrued Liability	**$2,281,087**	**$2,284,841**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,305,953	$2,281,087	($24,866)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$2,281,087	$2,284,841
2. Actuarial value of assets	1,855,678	1,950,646
3. Unfunded accrued liability *(1. – 2.)*	425,409	334,195
4. Funded percentage *(2. ÷ 1.)*	81%	85%
5. Combined valuation payroll	$401,938	$469,828
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	106%	71%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$425,409	$28,162
Total				**$425,409**	**$28,162**

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, 2017	$2,284,841
b. Normal cost at December 31, 2017 (excluding assumed expenses)	10,467
c. Benefit payments during 2018	(155,625)
d. Interest at 7.20% to December 31, 2018	159,283
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,298,966
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(24,866)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	2,274,100
2. Actuarial accrued liability at December 31, 2018	2,281,087
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(6,987)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	1,950,646
b. Contributions for 2018[1]	13,776
c. Benefit payments and expenses during 2018	(156,587)
d. Interest at 7.20% to December 31, 2018	135,305
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	1,943,140
5. Actuarial value of assets at December 31, 2018	1,855,678
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(87,462)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($94,449)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$334,195**
2. Expected increase	21,631
3. Liability (gain)/loss	6,987
4. Asset (gain)/loss	87,462
5. Change due to changes in assumptions, methods, and plan provisions	(24,866)
6. UAL at December 31, 2018 *(1. + 2. + 3. + 4. + 5.)*	**$425,409**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	10,323	64,466	16.01%	11,109	70,389	15.78%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$10,323**	**$64,466**	**16.01%**	**$11,109**	**$70,389**	**15.78%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$425,409	$334,195
2. Next year's Tier 1/Tier 2 UAL payment	28,162	26,312
3. Combined valuation payroll	401,938	469,828
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	7.01%	5.60%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.01%	15.78%
b. Tier 1/Tier 2 UAL rate	7.01%	5.60%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	23.16%	21.53%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	19.27%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	19.27%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.85%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.85%
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.)*	3.85%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	15.42%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	23.12%
7. Advisory July 1, 2021 total pension rate, before adjustment	23.16%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.04%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	7.01%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	6.97%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	23.12%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.01%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.01%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	23.12%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.01%	15.78%
b. Tier 1/Tier 2 UAL rate	6.97%	3.34%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	23.12%	19.27%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	0	64,466	64,466
Tier 1/Tier 2 valuation payroll	0	64,466	64,466
OPSRP valuation payroll	59,854	277,617	337,472
Combined valuation payroll	**$59,854**	**$342,083**	**$401,938**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	2	2	0	0	1	1
Police & Fire	0	1	5	6	0	1	6	7
Total	0	1	7	8	0	1	7	8
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	6	0	2	8	6	0	2	8
Total	6	0	2	8	6	0	2	8
Grand Total Number of Members	**7**	**1**	**9**	**17**	**7**	**1**	**9**	**17**

[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, 2018

	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, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	1	1,864
55-59		
60-64		
65-69		
70-74		
75+		
Total	1	1,864

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	2	2,105
60-64	1	1,588
65-69	3	4,752
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	6	3,342

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Port of Umatilla/2581
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Port of Umatilla -- #2581

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Port of Umatilla to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Port of Umatilla

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	20.50%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	8.80%	8.80%	8.80%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**28.61%**	**18.56%**	**22.93%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**28.66%**	**18.56%**	**22.93%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 81%.

Funded Status as of December 31, 2019	**70% to 130%**	**Under 60% or Over 140%**
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	24.42%	24.42%
Minimum 2021-2023 Rate	19.54%	14.66%
Maximum 2021-2023 Rate	29.30%	34.18%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	1,732,025	2,213,777	481,752	78%	157,607	306%
12/31/2018	1,705,861	2,115,932	410,071	81%	164,644	249%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$410,071	$481,752
Allocated pooled OPSRP UAL	29,729	23,750
Side account	0	0
Net unfunded pension actuarial accrued liability	439,800	505,502
Combined valuation payroll	164,644	157,607
Net pension UAL as a percentage of payroll	267%	321%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($2,413)	($1,806)

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 the combined valuation payroll 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, 2018	December 31, 2017
Normal cost	$33,754	$39,664
Tier 1/Tier 2 valuation payroll	164,644	157,607
Tier 1/Tier 2 pension normal cost rate	20.50%	25.17%
Tier 1/ Tier 2 Actuarial accrued liability	$2,115,932	$2,213,777
Actuarial asset value	1,705,861	1,732,025
Tier 1/Tier 2 Unfunded actuarial accrued liability	410,071	481,752
Tier 1/ Tier 2 Funded status	81%	78%
Combined valuation payroll	$164,644	$157,607
Tier 1/Tier 2 UAL as a percentage of payroll	249%	306%
Tier 1/Tier 2 UAL rate	8.80%	(0.75%)
(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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	164,644	157,607
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$221,486	$205,711
2. Employer reserves	964,171	929,470
3. Benefits in force reserve	520,204	596,844
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,705,861**	**$1,732,025**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$1,732,025
2.	Regular employer contributions	32,255
3.	Benefit payments and expenses	(113,984)
4.	Adjustments [1]	37,484
5.	Interest credited	18,081
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,705,861**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	33,754	39,664
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$33,754**	**$39,664**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$32,817	$33,754	$937

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	758,426	861,868
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$758,426**	**$861,868**
Dormant Members	0	0
Retired Members and Beneficiaries	1,357,506	1,351,909
Total Actuarial Accrued Liability	**$2,115,932**	**$2,213,777**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,100,217	$2,115,932	$15,715

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, 2018	December 31, 2017
1. Actuarial accrued liability	$2,115,932	$2,213,777
2. Actuarial value of assets	1,705,861	1,732,025
3. Unfunded accrued liability *(1. – 2.)*	410,071	481,752
4. Funded percentage *(2. ÷ 1.)*	81%	78%
5. Combined valuation payroll	$164,644	$157,607
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	249%	306%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$410,071	$27,146
Total				**$410,071**	**$27,146**

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, 2017	$2,213,777
b. Normal cost at December 31, 2017 (excluding assumed expenses)	37,371
c. Benefit payments during 2018	(113,283)
d. Interest at 7.20% to December 31, 2018	156,659
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,294,524
f. Change in actuarial accrued liability due to assumption, method, and plan changes	15,715
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	2,310,239
2. Actuarial accrued liability at December 31, 2018	2,115,932
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	194,307
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	1,732,025
b. Contributions for 2018[1]	32,255
c. Benefit payments and expenses during 2018	(113,984)
d. Interest at 7.20% to December 31, 2018	121,764
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	1,772,060
5. Actuarial value of assets at December 31, 2018	1,705,861
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(66,199)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**$128,108**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$481,752**
2. Expected increase	40,713
3. Liability (gain)/loss	(194,307)
4. Asset (gain)/loss	66,199
5. Change due to changes in assumptions, methods, and plan provisions	15,715
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$410,071**

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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	33,754	164,644	20.50%	39,664	157,607	25.17%
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	**$33,754**	**$164,644**	**20.50%**	**$39,664**	**$157,607**	**25.17%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$410,071	$481,752
2. Next year's Tier 1/Tier 2 UAL payment	27,146	37,836
3. Combined valuation payroll	164,644	157,607
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	16.49%	24.01%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	20.50%	25.17%
b. Tier 1/Tier 2 UAL rate	16.49%	24.01%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	37.13%	49.33%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	24.42%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	24.42%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	4.88%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.88%
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.)*	4.88%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	19.54%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	29.30%
7. Advisory July 1, 2021 total pension rate, before adjustment	37.13%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(7.83%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	16.49%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	8.66%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	29.30%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	20.50%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	20.50%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	29.30%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	20.50%	25.17%
b. Tier 1/Tier 2 UAL rate	8.66%	(0.90%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	29.30%	24.42%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$164,644	$0	$164,644
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	164,644	0	164,644
OPSRP valuation payroll	0	0	0
Combined valuation payroll	**$164,644**	**$0**	**$164,644**

Employer Member Census

	December 31							
	2018				2017			
	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, 2018

	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	0	1	0	0	0	0	1

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

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	3,768
65-69	1	2,599
70-74		
75-79	1	2,022
80-84		
85-89		
90-94		
95-99		
100+		
Total	3	2,796

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Bend Parks & Recreation/2596
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
Bend Parks & Recreation/2596

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Bend Parks & Recreation -- #2596

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Bend Parks & Recreation to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Bend Parks & Recreation.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Bend Parks & Recreation

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.45%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	6.39%	6.39%	6.39%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**19.15%**	**16.15%**	**20.52%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**19.20%**	**16.15%**	**20.52%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 65%.

Funded Status as of December 31, 2019	**70% to 130%**	**Under 60% or Over 140%**
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	17.31%	17.31%
Minimum 2021-2023 Rate	13.85%	10.39%
Maximum 2021-2023 Rate	20.77%	24.23%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$14,514,102	$15,625,224	$1,111,122	93%	$5,832,411	19%
12/31/2014	15,166,419	18,905,398	3,738,979	80%	6,929,756	54%
12/31/2015	15,168,590	20,375,765	5,207,175	74%	7,132,955	73%
12/31/2016	14,743,663	22,098,399	7,354,736	67%	8,161,184	90%
12/31/2017	16,582,080	22,858,147	6,276,067	73%	8,132,587	77%
12/31/2018	15,976,634	24,467,095	8,490,460	65%	8,985,951	94%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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.

Bend Parks & Recreation

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$8,490,461	$6,276,067
Allocated pooled OPSRP UAL	1,622,538	1,225,509
Side account	0	0
Net unfunded pension actuarial accrued liability	10,112,999	7,501,576
Combined valuation payroll	8,985,951	8,132,587
Net pension UAL as a percentage of payroll	113%	92%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($131,714)	($93,185)

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 the combined valuation payroll 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, 2018	December 31, 2017
Normal cost	$338,447	$345,175
Tier 1/Tier 2 valuation payroll	2,515,781	2,573,415
Tier 1/Tier 2 pension normal cost rate	13.45%	13.41%
Tier 1/ Tier 2 Actuarial accrued liability	$24,467,095	$22,858,147
Actuarial asset value	15,976,634	16,582,080
Tier 1/Tier 2 Unfunded actuarial accrued liability	8,490,461	6,276,067
Tier 1/ Tier 2 Funded status	65%	73%
Combined valuation payroll	$8,985,951	$8,132,587
Tier 1/Tier 2 UAL as a percentage of payroll	94%	77%
Tier 1/Tier 2 UAL rate	6.39%	3.90%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	34	36
Tier 1/Tier 2 dormant members	64	67
Tier 1/Tier 2 retirees and beneficiaries	103	95

[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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	8,985,951	8,132,587
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$2,104,874	$2,337,401
2. Employer reserves	9,058,342	9,214,090
3. Benefits in force reserve	4,813,418	5,030,588
4. Total market value of assets *(1. + 2. + 3.)*	**$15,976,634**	**$16,582,080**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$16,582,080
2.	Regular employer contributions	435,741
3.	Benefit payments and expenses	(1,054,684)
4.	Adjustments [1]	(141,718)
5.	Interest credited	155,216
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$15,976,634**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	171,501	183,172
Tier 2 Police & Fire	0	0
Tier 2 General Service	166,946	162,003
Total	**$338,447**	**$345,175**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$331,295	$338,447	$7,152

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	5,817,785	5,895,611
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	4,206,182	3,771,324
▪ **Total Active Members**	**$10,023,967**	**$9,666,935**
Dormant Members	1,882,187	1,796,458
Retired Members and Beneficiaries	12,560,940	11,394,754
Total Actuarial Accrued Liability	**$24,467,095**	**$22,858,147**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$24,300,415	$24,467,095	$166,680

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, 2018	December 31, 2017
1. Actuarial accrued liability	$24,467,095	$22,858,147
2. Actuarial value of assets	15,976,634	16,582,080
3. Unfunded accrued liability *(1. – 2.)*	8,490,461	6,276,067
4. Funded percentage *(2. ÷ 1.)*	65%	73%
5. Combined valuation payroll	$8,985,951	$8,132,587
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	94%	77%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$8,490,461	$562,059
Total				**$8,490,461**	**$562,059**

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, 2017	$22,858,147
b. Normal cost at December 31, 2017 (excluding assumed expenses)	325,333
c. Benefit payments during 2018	(1,048,199)
d. Interest at 7.20% to December 31, 2018	1,619,763
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	23,755,044
f. Change in actuarial accrued liability due to assumption, method, and plan changes	166,680
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	23,921,724
2. Actuarial accrued liability at December 31, 2018	24,467,095
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(545,371)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	16,582,080
b. Contributions for 2018[1]	435,741
c. Benefit payments and expenses during 2018	(1,054,684)
d. Interest at 7.20% to December 31, 2018	1,171,628
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	17,134,764
5. Actuarial value of assets at December 31, 2018	15,976,634
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(1,158,130)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($1,703,501)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$6,276,067**
2. Expected increase	344,213
3. Liability (gain)/loss	545,371
4. Asset (gain)/loss	1,158,130
5. Change due to changes in assumptions, methods, and plan provisions	166,680
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$8,490,461**

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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	171,501	1,187,167	14.45%	183,172	1,247,175	14.69%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	166,946	1,328,614	12.57%	162,003	1,326,240	12.22%
Total	**$338,447**	**$2,515,781**	**13.45%**	**$345,175**	**$2,573,415**	**13.41%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$8,490,461	$6,276,067
2. Next year's Tier 1/Tier 2 UAL payment	562,059	478,701
3. Combined valuation payroll	8,985,951	8,132,587
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	6.25%	5.89%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	13.45%	13.41%
b. Tier 1/Tier 2 UAL rate	6.25%	5.89%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	19.84%	19.45%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	17.31%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	17.31%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.46%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.46%
c. Funded percentage	65%
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.)*	5.19%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	12.12%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	22.50%
7. Advisory July 1, 2021 total pension rate, before adjustment	19.84%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	6.25%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	6.25%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	19.84%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.45%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.45%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	19.84%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	13.45%	13.41%
b. Tier 1/Tier 2 UAL rate	6.25%	3.75%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	19.84%	17.31%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$1,187,167	$0	$1,187,167
Tier 2	1,328,614	0	1,328,614
Tier 1/Tier 2 valuation payroll	2,515,781	0	2,515,781
OPSRP valuation payroll	6,470,170	0	6,470,170
Combined valuation payroll	**$8,985,951**	**$0**	**$8,985,951**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	16	18	178	212	17	19	166	202
Police & Fire	0	0	0	0	0	0	0	0
Total	16	18	178	212	17	19	166	202
Active Members with previous service segments with the employer								
General Service	16	55	N/A	71	19	56	N/A	75
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	16	55	N/A	71	19	56	N/A	75
Dormant Members								
General Service	28	36	37	101	30	37	30	97
Police & Fire	0	0	0	0	0	0	0	0
Total	28	36	37	101	30	37	30	97
Retired Members and Beneficiaries								
General Service	88	15	9	112	82	13	6	101
Police & Fire	0	0	0	0	0	0	0	0
Total	88	15	9	112	82	13	6	101
Grand Total Number of Members	**148**	**124**	**224**	**496**	**148**	**125**	**202**	**475**

[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, 2018

	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				3	3	1				7
50-54			1	3	1	2				7
55-59				2	2	4	1			9
60-64				5			1			6
65-69						2				2
70-74										
75+										
Total	0	0	1	16	6	9	2	0	0	34

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34	3	215
35-39	4	119
40-44	5	299
45-49	13	210
50-54	13	466
55-59	12	353
60-64	9	107
65-69	3	16
70-74	2	10
75+		
Total	64	261

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	7	172
60-64	22	931
65-69	40	975
70-74	20	364
75-79	12	724
80-84	1	633
85-89		
90-94	1	704
95-99		
100+		
Total	103	757

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Mapleton Water District/2597
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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

ACTUARIAL VALUATION REPORT DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Mapleton Water District -- #2597

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Mapleton Water District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Mapleton Water District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	17.58%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	(1.93%)	(1.93%)	(1.93%)
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**14.96%**	**7.83%**	**12.20%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**15.01%**	**7.83%**	**12.20%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 110%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	16.61%	16.61%
Minimum 2021-2023 Rate	13.29%	9.97%
Maximum 2021-2023 Rate	19.93%	23.25%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	287,016	281,148	(5,868)	102%	78,312	(7%)
12/31/2018	281,939	257,378	(24,561)	110%	78,542	(31%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	($24,561)	($5,868)
Allocated pooled OPSRP UAL	14,182	11,801
Side account	0	0
Net unfunded pension actuarial accrued liability	(10,379)	5,933
Combined valuation payroll	78,542	78,312
Net pension UAL as a percentage of payroll	(13%)	8%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($1,151)	($897)

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 the combined valuation payroll 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, 2018	December 31, 2017
Normal cost	$10,487	$9,970
Tier 1/Tier 2 valuation payroll	59,668	58,467
Tier 1/Tier 2 pension normal cost rate	17.58%	17.05%
Tier 1/ Tier 2 Actuarial accrued liability	$257,378	$281,148
Actuarial asset value	281,939	287,016
Tier 1/Tier 2 Unfunded actuarial accrued liability	(24,561)	(5,868)
Tier 1/ Tier 2 Funded status	110%	102%
Combined valuation payroll	$78,542	$78,312
Tier 1/Tier 2 UAL as a percentage of payroll	(31%)	(7%)
Tier 1/Tier 2 UAL rate	(1.93%)	(0.44%)
(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	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, 2018	Actuarial Valuation as of December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions) RHIA	Actuarial Valuation as of December 31, 2018	Actuarial Valuation as of December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	78,542	78,312
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$72,102	$66,967
2. Employer reserves	209,837	200,995
3. Benefits in force reserve	0	19,054
4. Total market value of assets *(1. + 2. + 3.)*	**$281,939**	**$287,016**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$287,016
2. Regular employer contributions	8,369
3. Benefit payments and expenses	0
4. Adjustments [1]	(18,690)
5. Interest credited	5,244
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$281,939**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	10,487	9,970
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$10,487**	**$9,970**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$10,326	$10,487	$161

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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	257,378	237,989
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$257,378**	**$237,989**
Dormant Members	0	0
Retired Members and Beneficiaries	0	43,159
Total Actuarial Accrued Liability	**$257,378**	**$281,148**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$254,606	$257,378	$2,772

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, 2018	December 31, 2017
1. Actuarial accrued liability	$257,378	$281,148
2. Actuarial value of assets	281,939	287,016
3. Unfunded accrued liability *(1. – 2.)*	(24,561)	(5,868)
4. Funded percentage *(2. ÷ 1.)*	110%	102%
5. Combined valuation payroll	$78,542	$78,312
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(31%)	(7%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	($24,561)	($1,626)
Total				**($24,561)**	**($1,626)**

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, 2017	$281,148
b. Normal cost at December 31, 2017 (excluding assumed expenses)	9,394
c. Benefit payments during 2018	0
d. Interest at 7.20% to December 31, 2018	20,581
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	311,122
f. Change in actuarial accrued liability due to assumption, method, and plan changes	2,772
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	313,894
2. Actuarial accrued liability at December 31, 2018	257,378
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	56,516
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	287,016
b. Contributions for 2018[1]	8,369
c. Benefit payments and expenses during 2018	0
d. Interest at 7.20% to December 31, 2018	20,966
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	316,352
5. Actuarial value of assets at December 31, 2018	281,939
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(34,413)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$22,103**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**($5,868)**
2. Expected increase	638
3. Liability (gain)/loss	(56,516)
4. Asset (gain)/loss	34,413
5. Change due to changes in assumptions, methods, and plan provisions	2,772
6. UAL at December 31, 2018 *(1. + 2. + 3. + 4. + 5.)*	**($24,561)**

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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	10,487	59,668	17.58%	9,970	58,467	17.05%
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	**$10,487**	**$59,668**	**17.58%**	**$9,970**	**$58,467**	**17.05%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	($24,561)	($5,868)
2. Next year's Tier 1/Tier 2 UAL payment	(1,626)	(463)
3. Combined valuation payroll	78,542	78,312
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(2.07%)	(0.59%)

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	17.58%	17.05%
b. Tier 1/Tier 2 UAL rate	(2.07%)	(0.59%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	15.65%	16.61%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	16.61%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	16.61%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.32%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.32%
c. Funded percentage	110%
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.)*	3.32%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	13.29%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	19.93%
7. Advisory July 1, 2021 total pension rate, before adjustment	15.65%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	(2.07%)
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(2.07%)
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	15.65%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.58%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.58%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	15.65%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	17.58%	17.05%
b. Tier 1/Tier 2 UAL rate	(2.07%)	(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 5.95%)*	15.65%	16.61%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$59,668	$0	$59,668
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	59,668	0	59,668
OPSRP valuation payroll	18,874	0	18,874
Combined valuation payroll	**$78,542**	**$0**	**$78,542**

Employer Member Census

	December 31							
	2018				2017			
	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	0	0	0	0	1	0	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1
Grand Total Number of Members	**1**	**0**	**1**	**2**	**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, 2018

	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, 2018

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, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Gaston Rural Fire Protection District/2608
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Gaston Rural Fire Protection District -- #2608

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Gaston Rural Fire Protection District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Gaston Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	**General Service**	**Police & Fire**
Pension			
Normal cost rate	16.97%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	1.29%	1.29%	1.29%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**17.57%**	**11.05%**	**15.42%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**17.62%**	**11.05%**	**15.42%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 84%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	15.22%	15.22%
Minimum 2021-2023 Rate	12.18%	9.14%
Maximum 2021-2023 Rate	18.26%	21.30%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	392,982	336,971	(56,011)	117%	179,343	(31%)
12/31/2018	343,498	410,506	67,008	84%	126,476	53%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$67,008	($56,011)
Allocated pooled OPSRP UAL	22,837	27,025
Side account	0	0
Net unfunded pension actuarial accrued liability	89,845	(28,986)
Combined valuation payroll	126,476	179,343
Net pension UAL as a percentage of payroll	71%	(16%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($1,854)	($2,055)

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 the combined valuation payroll 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, 2018	December 31, 2017
Normal cost	$0	$0
Tier 1/Tier 2 valuation payroll	0	0
Tier 1/Tier 2 pension normal cost rate	16.97%	16.92%
Tier 1/ Tier 2 Actuarial accrued liability	$410,506	$336,971
Actuarial asset value	343,498	392,982
Tier 1/Tier 2 Unfunded actuarial accrued liability	67,008	(56,011)
Tier 1/ Tier 2 Funded status	84%	117%
Combined valuation payroll	$126,476	$179,343
Tier 1/Tier 2 UAL as a percentage of payroll	53%	(31%)
Tier 1/Tier 2 UAL rate	1.29%	(1.70%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	3	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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	126,476	179,343
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$53,482	$52,856
2. Employer reserves	249,589	311,279
3. Benefits in force reserve	40,427	28,847
4. Total market value of assets ***(1. + 2. + 3.)***	**$343,498**	**$392,982**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$392,982
2.	Regular employer contributions	3,769
3.	Benefit payments and expenses	(8,858)
4.	Adjustments [1]	(47,257)
5.	Interest credited	2,862
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$343,498**

[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, 2018	December 31, 2017
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, 2018.

	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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$224,798	$193,354
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	36,837	35,005
▪ Tier 2 General Service	41,158	41,060
▪ **Total Active Members**	**$302,793**	**$269,419**
Dormant Members	2,215	2,210
Retired Members and Beneficiaries	105,498	65,342
Total Actuarial Accrued Liability	**$410,506**	**$336,971**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$412,453	$410,506	($1,946)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$410,506	$336,971
2. Actuarial value of assets	343,498	392,982
3. Unfunded accrued liability *(1. – 2.)*	67,008	(56,011)
4. Funded percentage *(2. ÷ 1.)*	84%	117%
5. Combined valuation payroll	$126,476	$179,343
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	53%	(31%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$67,008	$4,436
Total				**$67,008**	**$4,436**

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, 2017	$336,971
b. Normal cost at December 31, 2017 (excluding assumed expenses)	0
c. Benefit payments during 2018	(8,804)
d. Interest at 7.20% to December 31, 2018	23,945
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	352,112
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(1,946)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	350,166
2. Actuarial accrued liability at December 31, 2018	410,506
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(60,341)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	392,982
b. Contributions for 2018[1]	3,769
c. Benefit payments and expenses during 2018	(8,858)
d. Interest at 7.20% to December 31, 2018	28,111
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	416,004
5. Actuarial value of assets at December 31, 2018	343,498
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(72,506)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($132,847)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**($56,011)**
2. Expected increase	(7,881)
3. Liability (gain)/loss	60,341
4. Asset (gain)/loss	72,506
5. Change due to changes in assumptions, methods, and plan provisions	(1,946)
6. UAL at December 31, 2018 *(1. + 2. + 3. + 4. + 5.)*	**$67,008**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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**	**16.97%**	**$0**	**$0**	**16.92%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$67,008	($56,011)
2. Next year's Tier 1/Tier 2 UAL payment	4,436	(3,316)
3. Combined valuation payroll	126,476	179,343
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	3.51%	(1.85%)

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.97%	16.92%
b. Tier 1/Tier 2 UAL rate	3.51%	(1.85%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	20.62%	15.22%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	15.22%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	15.22%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.04%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.04%
c. Funded percentage	84%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	12.18%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	18.26%
7. Advisory July 1, 2021 total pension rate, before adjustment	20.62%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(2.36%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	3.51%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	1.15%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	18.26%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.97%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.97%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	18.26%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.97%	16.92%
b. Tier 1/Tier 2 UAL rate	1.15%	(1.85%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	18.26%	15.22%

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	126,476	126,476
Combined valuation payroll	**$0**	**$126,476**	**$126,476**

Employer Member Census

	December 31							
	2018				2017			
	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	4	4
Total	0	0	2	2	0	0	4	4
Active Members with previous service segments with the employer								
General Service	0	1	N/A	1	0	1	N/A	1
Police & Fire	2	1	N/A	3	2	1	N/A	3
Total	2	2	N/A	4	2	2	N/A	4
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	3	0	1	4	2	0	0	2
Total	3	0	1	4	2	0	0	2
Grand Total Number of Members	**5**	**3**	**3**	**11**	**4**	**3**	**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, 2018

	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, 2018

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	185
65-69		
70-74		
75+		
Total	1	185

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	240
65-69		
70-74	1	169
75-79		
80-84		
85-89	1	588
90-94		
95-99		
100+		
Total	3	332

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Turner Fire District/2610
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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

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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Turner Fire District -- #2610

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Turner Fire District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Turner Fire District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	32.34%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	(7.19%)	(7.19%)	(7.19%)
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**24.46%**	**2.57%**	**6.94%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**24.51%**	**2.57%**	**6.94%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 82%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	20.96%	20.96%
Minimum 2021-2023 Rate	16.77%	12.58%
Maximum 2021-2023 Rate	25.15%	29.34%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	1,675,002	1,882,397	207,395	89%	508,845	41%
12/31/2018	1,606,508	1,965,782	359,274	82%	620,233	58%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$359,274	$207,395
Allocated pooled OPSRP UAL	111,992	76,678
Side account	0	0
Net unfunded pension actuarial accrued liability	471,266	284,073
Combined valuation payroll	620,233	508,845
Net pension UAL as a percentage of payroll	76%	56%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($9,091)	($5,830)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$31,294	$24,073
Tier 1/Tier 2 valuation payroll	96,769	96,422
Tier 1/Tier 2 pension normal cost rate	32.34%	24.97%
Tier 1/ Tier 2 Actuarial accrued liability	$1,965,782	$1,882,397
Actuarial asset value	1,606,508	1,675,002
Tier 1/Tier 2 Unfunded actuarial accrued liability	359,274	207,395
Tier 1/ Tier 2 Funded status	82%	89%
Combined valuation payroll	$620,233	$508,845
Tier 1/Tier 2 UAL as a percentage of payroll	58%	41%
Tier 1/Tier 2 UAL rate	(7.19%)	(4.01%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	2	1
Tier 1/Tier 2 dormant members	7	8
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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	620,233	508,845
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$187,362	$183,863
2. Employer reserves	1,117,171	1,142,621
3. Benefits in force reserve	301,975	348,517
4. Total market value of assets *(1. + 2. + 3.)*	**$1,606,508**	**$1,675,002**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$1,675,002
2. Regular employer contributions	(27,695)
3. Benefit payments and expenses	(66,167)
4. Adjustments [1]	19,437
5. Interest credited	5,930
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$1,606,508**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$24,544	$23,838
Tier 1 General Service	6,750	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	235
Total	**$31,294**	**$24,073**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$30,874	$31,294	$420

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$905,973	$834,773
▪ Tier 1 General Service	1,275	0
▪ Tier 2 Police & Fire	144,177	137,497
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$1,051,425**	**$972,270**
Dormant Members	126,333	120,702
Retired Members and Beneficiaries	788,024	789,425
Total Actuarial Accrued Liability	**$1,965,782**	**$1,882,397**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,943,256	$1,965,782	$22,525

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, 2018	December 31, 2017
1. Actuarial accrued liability	$1,965,782	$1,882,397
2. Actuarial value of assets	1,606,508	1,675,002
3. Unfunded accrued liability *(1. – 2.)*	359,274	207,395
4. Funded percentage *(2. ÷ 1.)*	82%	89%
5. Combined valuation payroll	$620,233	$508,845
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	58%	41%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$359,274	$23,784
Total				**$359,274**	**$23,784**

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, 2017	$1,882,397
b. Normal cost at December 31, 2017 (excluding assumed expenses)	22,695
c. Benefit payments during 2018	(65,760)
d. Interest at 7.20% to December 31, 2018	133,982
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,973,314
f. Change in actuarial accrued liability due to assumption, method, and plan changes	22,525
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	1,995,839
2. Actuarial accrued liability at December 31, 2018	1,965,782
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	30,058
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	1,675,002
b. Contributions for 2018[1]	(27,695)
c. Benefit payments and expenses during 2018	(66,167)
d. Interest at 7.20% to December 31, 2018	117,221
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	1,698,361
5. Actuarial value of assets at December 31, 2018	1,606,508
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(91,854)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($61,796)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$207,395**
2. Expected increase	67,558
3. Liability (gain)/loss	(30,058)
4. Asset (gain)/loss	91,854
5. Change due to changes in assumptions, methods, and plan provisions	22,525
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$359,274**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	$24,544	$96,150	25.53%	$23,838	$94,742	25.16%
Tier 1 General Service	6,750	619	090.47%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	235	1,680	13.99%
Total	**$31,294**	**$96,769**	**32.34%**	**$24,073**	**$96,422**	**24.97%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$359,274	$207,395
2. Next year's Tier 1/Tier 2 UAL payment	23,784	14,351
3. Combined valuation payroll	620,233	508,845
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	3.83%	2.82%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	32.34%	24.97%
b. Tier 1/Tier 2 UAL rate	3.83%	2.82%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	36.31%	27.94%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	20.96%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	20.96%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	4.19%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.19%
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.)*	4.19%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	16.77%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	25.15%
7. Advisory July 1, 2021 total pension rate, before adjustment	36.31%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(11.16%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	3.83%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(7.33%)
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	25.15%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	32.34%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	32.34%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	25.15%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	32.34%	24.97%
b. Tier 1/Tier 2 UAL rate	(7.33%)	(4.16%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	25.15%	20.96%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$619	$96,150	$96,769
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	619	96,150	96,769
OPSRP valuation payroll	22,426	501,038	523,464
Combined valuation payroll	**$23,045**	**$597,188**	**$620,233**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	0	1	0	0	6	6
Police & Fire	1	0	13	14	1	0	12	13
Total	2	0	13	15	1	0	18	19
Active Members with previous service segments with the employer								
General Service	1	0	N/A	1	1	1	N/A	2
Police & Fire	7	13	N/A	20	6	13	N/A	19
Total	8	13	N/A	21	7	14	N/A	21
Dormant Members								
General Service	0	1	1	2	0	1	1	2
Police & Fire	0	6	2	8	1	6	2	9
Total	0	7	3	10	1	7	3	11
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	6	1	0	7	6	1	0	7
Total	6	1	0	7	6	1	0	7
Grand Total Number of Members	**16**	**21**	**16**	**53**	**15**	**22**	**21**	**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, 2018

	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**	**0**	**0**	**2**	**0**	**0**	**0**	**2**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	1	413
40-44	1	137
45-49	1	210
50-54	2	20
55-59	1	354
60-64		
65-69	1	1,242
70-74		
75+		
Total	7	342

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	3	23
60-64	2	19
65-69	1	934
70-74	1	3,560
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	7	657

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Polk Soil & Water Conservation District/2613
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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.

December 2019
Polk Soil & Water Conservation District/2613

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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Polk Soil & Water Conservation District -- #2613

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Polk Soil & Water Conservation District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Polk Soil & Water Conservation District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	12.63%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	3.86%	3.86%	3.86%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**15.80%**	**13.62%**	**17.99%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**15.85%**	**13.62%**	**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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 76%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	19.26%	19.26%
Minimum 2021-2023 Rate	15.41%	11.56%
Maximum 2021-2023 Rate	23.11%	26.96%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	397,114	490,205	93,091	81%	234,012	40%
12/31/2018	390,089	512,633	122,544	76%	218,062	56%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$122,544	$93,091
Allocated pooled OPSRP UAL	39,374	35,264
Side account	0	0
Net unfunded pension actuarial accrued liability	161,918	128,355
Combined valuation payroll	218,062	234,012
Net pension UAL as a percentage of payroll	74%	55%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($3,196)	($2,681)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$3,224	$11,055
Tier 1/Tier 2 valuation payroll	25,528	69,209
Tier 1/Tier 2 pension normal cost rate	12.63%	15.97%
Tier 1/ Tier 2 Actuarial accrued liability	$512,633	$490,205
Actuarial asset value	390,089	397,114
Tier 1/Tier 2 Unfunded actuarial accrued liability	122,544	93,091
Tier 1/ Tier 2 Funded status	76%	81%
Combined valuation payroll	$218,062	$234,012
Tier 1/Tier 2 UAL as a percentage of payroll	56%	40%
Tier 1/Tier 2 UAL rate	3.86%	3.29%
(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	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, 2018	December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2018	December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	218,062	234,012
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$66,027	$62,976
2. Employer reserves	211,739	203,342
3. Benefits in force reserve	112,323	130,796
4. Total market value of assets ***(1. + 2. + 3.)***	**$390,089**	**$397,114**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$397,114
2.	Regular employer contributions	8,124
3.	Benefit payments and expenses	(24,611)
4.	Adjustments [1]	5,978
5.	Interest credited	3,484
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$390,089**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	11,055
Tier 2 Police & Fire	0	0
Tier 2 General Service	3,224	0
Total	**$3,224**	**$11,055**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$3,197	$3,224	$27

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	65,981	59,548
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	21,541	16,119
▪ **Total Active Members**	**$87,522**	**$75,667**
Dormant Members	131,998	118,272
Retired Members and Beneficiaries	293,113	296,266
Total Actuarial Accrued Liability	**$512,633**	**$490,205**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$511,555	$512,633	$1,078

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, 2018	December 31, 2017
1. Actuarial accrued liability	$512,633	$490,205
2. Actuarial value of assets	390,089	397,114
3. Unfunded accrued liability *(1. – 2.)*	122,544	93,091
4. Funded percentage *(2. ÷ 1.)*	76%	81%
5. Combined valuation payroll	$218,062	$234,012
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	56%	40%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$122,544	$8,112
Total				**$122,544**	**$8,112**

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, 2017	$490,205
b. Normal cost at December 31, 2017 (excluding assumed expenses)	10,416
c. Benefit payments during 2018	(24,460)
d. Interest at 7.20% to December 31, 2018	34,789
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	510,950
f. Change in actuarial accrued liability due to assumption, method, and plan changes	1,078
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	512,028
2. Actuarial accrued liability at December 31, 2018	512,633
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(605)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	397,114
b. Contributions for 2018[1]	8,124
c. Benefit payments and expenses during 2018	(24,611)
d. Interest at 7.20% to December 31, 2018	27,999
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	408,626
5. Actuarial value of assets at December 31, 2018	390,089
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(18,537)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($19,142)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$93,091**
2. Expected increase	9,233
3. Liability (gain)/loss	605
4. Asset (gain)/loss	18,537
5. Change due to changes in assumptions, methods, and plan provisions	1,078
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$122,544**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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%	11,055	69,209	15.97%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	3,224	25,528	12.63%	0	0	0.00%
Total	**$3,224**	**$25,528**	**12.63%**	**$11,055**	**$69,209**	**15.97%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$122,544	$93,091
2. Next year's Tier 1/Tier 2 UAL payment	8,112	7,341
3. Combined valuation payroll	218,062	234,012
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	3.72%	3.14%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	12.63%	15.97%
b. Tier 1/Tier 2 UAL rate	3.72%	3.14%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	16.49%	19.26%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	19.26%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	19.26%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.85%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.85%
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.)*	3.85%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	15.41%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	23.11%
7. Advisory July 1, 2021 total pension rate, before adjustment	16.49%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	3.72%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.72%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	16.49%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	12.63%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	12.63%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	16.49%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	12.63%	15.97%
b. Tier 1/Tier 2 UAL rate	3.72%	3.14%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	16.49%	19.26%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	25,528	0	25,528
Tier 1/Tier 2 valuation payroll	25,528	0	25,528
OPSRP valuation payroll	192,534	0	192,534
Combined valuation payroll	**$218,062**	**$0**	**$218,062**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	4	5	1	0	3	4
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	4	5	1	0	3	4
Active Members with previous service segments with the employer								
General Service	2	2	N/A	4	1	2	N/A	3
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	2	2	N/A	4	1	2	N/A	3
Dormant Members								
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
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	**3**	**4**	**6**	**13**	**3**	**3**	**5**	**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, 2018

	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, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	1	1,229
55-59		
60-64		
65-69		
70-74		
75+		
Total	1	1,229

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75-79	1	2,275
80-84		
85-89		
90-94		
95-99		
100+		
Total	1	2,275

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool's current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Estacada Cemetery District/2618
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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

December 2019
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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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

Milliman

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Estacada Cemetery District -- #2618

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Estacada Cemetery District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Estacada Cemetery District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	22.19%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	(16.24%)	(16.24%)	(16.24%)
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**5.26%**	**0.00%**	**0.00%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**5.31%**	**0.00%**	**0.00%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 357%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	5.94%	5.94%
Minimum 2021-2023 Rate	2.94%	0.00%
Maximum 2021-2023 Rate	8.94%	11.94%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%)
12/31/2017	405,040	110,338	(294,702)	367%	15,400	(1914%)
12/31/2018	401,411	112,314	(289,097)	357%	62,133	(465%)

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	($289,097)	($294,702)
Allocated pooled OPSRP UAL	11,219	2,321
Side account	0	0
Net unfunded pension actuarial accrued liability	(277,878)	(292,381)
Combined valuation payroll	62,133	15,400
Net pension UAL as a percentage of payroll	(447%)	(1,899%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($911)	($176)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$1,261	$1,241
Tier 1/Tier 2 valuation payroll	7,763	7,766
Tier 1/Tier 2 pension normal cost rate	22.19%	21.92%
Tier 1/ Tier 2 Actuarial accrued liability	$112,314	$110,338
Actuarial asset value	401,411	405,040
Tier 1/Tier 2 Unfunded actuarial accrued liability	(289,097)	(294,702)
Tier 1/ Tier 2 Funded status	357%	367%
Combined valuation payroll	$62,133	$15,400
Tier 1/Tier 2 UAL as a percentage of payroll	(465%)	(1914%)
Tier 1/Tier 2 UAL rate	(16.24%)	(15.98%)
(includes Multnomah Fire District #10)		
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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	62,133	15,400
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$41,824	$41,569
2. Employer reserves	359,587	363,471
3. Benefits in force reserve	0	0
4. Total market value of assets *(1. + 2. + 3.)*	**$401,411**	**$405,040**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$405,040
2. Regular employer contributions	(4,768)
3. Benefit payments and expenses	0
4. Adjustments [1]	244
5. Interest credited	895
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$401,411**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	1,261	1,241
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$1,261**	**$1,241**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$1,250	$1,261	$11

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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	32,255	30,651
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$32,255**	**$30,651**
Dormant Members	80,059	79,687
Retired Members and Beneficiaries	0	0
Total Actuarial Accrued Liability	**$112,314**	**$110,338**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$110,883	$112,314	$1,431

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, 2018	December 31, 2017
1. Actuarial accrued liability	$112,314	$110,338
2. Actuarial value of assets	401,411	405,040
3. Unfunded accrued liability *(1. – 2.)*	(289,097)	(294,702)
4. Funded percentage *(2. ÷ 1.)*	357%	367%
5. Combined valuation payroll	$62,133	$15,400
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(465%)	(1914%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	($289,097)	($19,138)
Total				**($289,097)**	**($19,138)**

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, 2017	$110,338
b. Normal cost at December 31, 2017 (excluding assumed expenses)	1,241
c. Benefit payments during 2018	0
d. Interest at 7.20% to December 31, 2018	7,989
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	119,568
f. Change in actuarial accrued liability due to assumption, method, and plan changes	1,431
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	120,999
2. Actuarial accrued liability at December 31, 2018	112,314
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	8,685
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	405,040
b. Contributions for 2018[1]	(4,768)
c. Benefit payments and expenses during 2018	0
d. Interest at 7.20% to December 31, 2018	28,991
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	429,263
5. Actuarial value of assets at December 31, 2018	401,411
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(27,852)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($19,167)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**($294,702)**
2. Expected increase	(14,992)
3. Liability (gain)/loss	(8,685)
4. Asset (gain)/loss	27,852
5. Change due to changes in assumptions, methods, and plan provisions	1,431
6. UAL at December 31, 2018 *(1. + 2. + 3. + 4. + 5.)*	**($289,097)**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	1,261	7,763	16.24%	1,241	7,766	15.98%
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	**$1,261**	**$7,763**	**16.24%**	**$1,241**	**$7,766**	**15.98%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	($289,097)	($294,702)
2. Next year's Tier 1/Tier 2 UAL payment	(19,138)	(23,721)
3. Combined valuation payroll	62,133	15,400
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(30.80%)	(154.03%)

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.24%	15.98%
b. Tier 1/Tier 2 UAL rate	(30.80%)	(154.03%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	(14.42%)	(137.90%)

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	5.94%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	5.94%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	1.19%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
c. Funded percentage	357%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	0.00%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	11.94%
7. Advisory July 1, 2021 total pension rate, before adjustment	(14.42%)
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	14.42%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	(30.80%)
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(16.38%)
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	0.00%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	5.95%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.24%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	22.19%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	5.95%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	22.19%	21.92%
b. Tier 1/Tier 2 UAL rate	(16.38%)	(16.13%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	5.95%	5.94%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$7,763	$0	$7,763
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	7,763	0	7,763
OPSRP valuation payroll	54,370	0	54,370
Combined valuation payroll	**$62,133**	**$0**	**$62,133**

Employer Member Census

	December 31							
	2018				2017			
	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	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
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**	**2**	**4**	**1**	**1**	**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, 2018

	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, 2018

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	484
65-69		
70-74		
75+		
Total	1	484

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, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Evans Valley Fire District #6/2623
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Evans Valley Fire District #6 -- #2623

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Evans Valley Fire District #6 to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Evans Valley Fire District #6

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.97%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	(4.04%)	(4.04%)	(4.04%)
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**12.24%**	**5.72%**	**10.09%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**12.29%**	**5.72%**	**10.09%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 75%.

Funded Status as of December 31, 2019	**70% to 130%**	**Under 60% or Over 140%**
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	9.93%	9.93%
Minimum 2021-2023 Rate	6.93%	3.93%
Maximum 2021-2023 Rate	12.93%	15.93%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%)
12/31/2017	681,201	536,507	(144,694)	127%	107,110	(135%)
12/31/2018	475,423	632,830	157,406	75%	48,740	323%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$157,407	($144,694)
Allocated pooled OPSRP UAL	8,801	16,141
Side account	0	0
Net unfunded pension actuarial accrued liability	166,208	(128,553)
Combined valuation payroll	48,740	107,111
Net pension UAL as a percentage of payroll	341%	(120%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($714)	($1,227)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$0	$13,151
Tier 1/Tier 2 valuation payroll	0	61,797
Tier 1/Tier 2 pension normal cost rate	16.97%	21.28%
Tier 1/ Tier 2 Actuarial accrued liability	$632,830	$536,507
Actuarial asset value	475,423	681,201
Tier 1/Tier 2 Unfunded actuarial accrued liability	157,407	(144,694)
Tier 1/ Tier 2 Funded status	75%	127%
Combined valuation payroll	$48,740	$107,111
Tier 1/Tier 2 UAL as a percentage of payroll	323%	(135%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(4.04%)	(11.35%)
Tier 1/Tier 2 active members [1]	0	1
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	4	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, 2018	December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2018	December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	48,740	107,111
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$20,552	$80,465
2. Employer reserves	232,812	553,748
3. Benefits in force reserve	222,059	46,988
4. Total market value of assets ***(1. + 2. + 3.)***	**$475,423**	**$681,201**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$681,201
2. Regular employer contributions	1,992
3. Benefit payments and expenses	(48,656)
4. Adjustments [1]	(161,908)
5. Interest credited	2,795
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$475,423**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	13,151
Tier 2 General Service	0	0
Total	**$0**	**$13,151**

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, 2018.

	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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$52,544
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	323,216
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$0**	**$375,760**
Dormant Members	53,351	54,313
Retired Members and Beneficiaries	579,479	106,434
Total Actuarial Accrued Liability	**$632,830**	**$536,507**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$637,368	$632,830	($4,539)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$632,830	$536,507
2. Actuarial value of assets	475,423	681,201
3. Unfunded accrued liability *(1. – 2.)*	157,407	(144,694)
4. Funded percentage *(2. ÷ 1.)*	75%	127%
5. Combined valuation payroll	$48,740	$107,111
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	323%	(135%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$157,407	$10,420
Total				**$157,407**	**$10,420**

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, 2017	$536,507
b. Normal cost at December 31, 2017 (excluding assumed expenses)	12,391
c. Benefit payments during 2018	(48,357)
d. Interest at 7.20% to December 31, 2018	37,334
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	537,875
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(4,539)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	533,336
2. Actuarial accrued liability at December 31, 2018	632,830
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(99,493)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	681,201
b. Contributions for 2018[1]	1,992
c. Benefit payments and expenses during 2018	(48,656)
d. Interest at 7.20% to December 31, 2018	47,367
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	681,903
5. Actuarial value of assets at December 31, 2018	475,423
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(206,480)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($305,973)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**($144,694)**
2. Expected increase	666
3. Liability (gain)/loss	99,493
4. Asset (gain)/loss	206,480
5. Change due to changes in assumptions, methods, and plan provisions	(4,539)
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$157,407**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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%	13,151	61,797	21.28%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$0**	**$0**	**16.97%**	**$13,151**	**$61,797**	**21.28%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$157,407	($144,694)
2. Next year's Tier 1/Tier 2 UAL payment	10,420	(12,322)
3. Combined valuation payroll	48,740	107,111
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	21.38%	(11.50%)

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.97%	21.28%
b. Tier 1/Tier 2 UAL rate	21.38%	(11.50%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	38.49%	9.93%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	9.93%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	9.93%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	1.99%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	6.93%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	12.93%
7. Advisory July 1, 2021 total pension rate, before adjustment	38.49%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(25.56%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	21.38%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(4.18%)
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	12.93%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.97%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.97%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	12.93%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.97%	21.28%
b. Tier 1/Tier 2 UAL rate	(4.18%)	(11.50%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	12.93%	9.93%

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	48,740	48,740
Combined valuation payroll	**$0**	**$48,740**	**$48,740**

Employer Member Census

	December 31							
	2018				2017			
	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	1	1	2
Total	0	0	1	1	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	1	0	N/A	1
Total	0	0	N/A	0	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	3	1	0	4	2	0	0	2
Total	3	1	0	4	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, 2018

	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, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	573
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total	1	573

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	1	303
55-59	1	2,361
60-64	1	505
65-69	1	57
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	4	806

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Port of Cascade Locks/2633
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Port of Cascade Locks -- #2633

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Port of Cascade Locks to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Port of Cascade Locks

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	13.66%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	1.09%	1.09%	1.09%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**14.06%**	**10.85%**	**15.22%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**14.11%**	**10.85%**	**15.22%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 86%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	11.75%	11.75%
Minimum 2021-2023 Rate	8.75%	5.75%
Maximum 2021-2023 Rate	14.75%	17.75%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	6,891,294	7,431,988	540,693	93%	493,641	110%
12/31/2018	6,588,224	7,647,590	1,059,366	86%	685,488	155%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$1,059,366	$540,694
Allocated pooled OPSRP UAL	123,774	74,387
Side account	0	0
Net unfunded pension actuarial accrued liability	1,183,140	615,081
Combined valuation payroll	685,488	493,641
Net pension UAL as a percentage of payroll	173%	125%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($10,048)	($5,656)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$9,521	$14,528
Tier 1/Tier 2 valuation payroll	69,697	102,612
Tier 1/Tier 2 pension normal cost rate	13.66%	14.16%
Tier 1/ Tier 2 Actuarial accrued liability	$7,647,590	$7,431,988
Actuarial asset value	6,588,224	6,891,294
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,059,366	540,694
Tier 1/ Tier 2 Funded status	86%	93%
Combined valuation payroll	$685,488	$493,641
Tier 1/Tier 2 UAL as a percentage of payroll	155%	110%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	1.09%	(2.41%)
Tier 1/Tier 2 active members [1]	1	2
Tier 1/Tier 2 dormant members	12	12
Tier 1/Tier 2 retirees and beneficiaries	33	31

[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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	685,488	493,641
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$1,109,778	$1,055,108
2. Employer reserves	3,622,376	3,751,597
3. Benefits in force reserve	1,856,070	2,084,590
4. Total market value of assets ***(1. + 2. + 3.)***	**$6,588,224**	**$6,891,294**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$6,891,294
2.	Regular employer contributions	(28,553)
3.	Benefit payments and expenses	(406,690)
4.	Adjustments [1]	63,321
5.	Interest credited	68,851
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$6,588,224**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	9,521	14,528
Total	**$9,521**	**$14,528**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$9,071	$9,521	$450

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	399,546	385,552
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	268,225	337,002
▪ **Total Active Members**	**$667,771**	**$722,554**
Dormant Members	2,136,280	1,987,643
Retired Members and Beneficiaries	4,843,540	4,721,791
Total Actuarial Accrued Liability	**$7,647,590**	**$7,431,988**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$7,623,117	$7,647,590	$24,473

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, 2018	December 31, 2017
1. Actuarial accrued liability	$7,647,590	$7,431,988
2. Actuarial value of assets	6,588,224	6,891,294
3. Unfunded accrued liability *(1. – 2.)*	1,059,366	540,694
4. Funded percentage *(2. ÷ 1.)*	86%	93%
5. Combined valuation payroll	$685,488	$493,641
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	155%	110%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$1,059,366	$70,129
Total				**$1,059,366**	**$70,129**

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, 2017	$7,431,988
b. Normal cost at December 31, 2017 (excluding assumed expenses)	13,688
c. Benefit payments during 2018	(404,189)
d. Interest at 7.20% to December 31, 2018	521,045
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	7,562,532
f. Change in actuarial accrued liability due to assumption, method, and plan changes	24,473
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	7,587,005
2. Actuarial accrued liability at December 31, 2018	7,647,590
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(60,585)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	6,891,294
b. Contributions for 2018[1]	(28,553)
c. Benefit payments and expenses during 2018	(406,690)
d. Interest at 7.20% to December 31, 2018	480,504
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	6,936,556
5. Actuarial value of assets at December 31, 2018	6,588,224
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(348,332)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($408,917)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$540,694**
2. Expected increase	85,283
3. Liability (gain)/loss	60,585
4. Asset (gain)/loss	348,332
5. Change due to changes in assumptions, methods, and plan provisions	24,473
6. UAL at December 31, 2018 *(1. + 2. + 3. + 4. + 5.)*	**$1,059,366**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	9,521	69,697	13.66%	14,528	102,612	14.16%
Total	**$9,521**	**$69,697**	**13.66%**	**$14,528**	**$102,612**	**14.16%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$1,059,366	$540,694
2. Next year's Tier 1/Tier 2 UAL payment	70,129	39,188
3. Combined valuation payroll	685,488	493,641
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	10.23%	7.94%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	13.66%	14.16%
b. Tier 1/Tier 2 UAL rate	10.23%	7.94%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	24.03%	22.25%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	11.75%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	11.75%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	2.35%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	8.75%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	14.75%
7. Advisory July 1, 2021 total pension rate, before adjustment	24.03%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(9.28%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	10.23%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.95%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	14.75%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	13.66%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	13.66%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	14.75%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	13.66%	14.16%
b. Tier 1/Tier 2 UAL rate	0.95%	(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 5.95%)*	14.75%	11.75%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	69,697	0	69,697
Tier 1/Tier 2 valuation payroll	69,697	0	69,697
OPSRP valuation payroll	615,791	0	615,791
Combined valuation payroll	**$685,488**	**$0**	**$685,488**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	17	18	0	2	17	19
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	17	18	0	2	17	19
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	8	4	2	14	8	4	2	14
Police & Fire	0	0	0	0	0	0	0	0
Total	8	4	2	14	8	4	2	14
Retired Members and Beneficiaries								
General Service	27	6	2	35	26	5	2	33
Police & Fire	0	0	0	0	0	0	0	0
Total	27	6	2	35	26	5	2	33
Grand Total Number of Members	**37**	**12**	**21**	**70**	**36**	**12**	**21**	**69**

[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, 2018

	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, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	635
45-49		
50-54	3	2,817
55-59	3	1,000
60-64	1	2,482
65-69	1	762
70-74	2	164
75+	1	14
Total	12	1,306

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49	1	85
50-54	1	1,304
55-59	1	1,920
60-64	3	2,326
65-69	11	1,163
70-74	3	77
75-79	5	748
80-84	5	667
85-89	3	217
90-94		
95-99		
100+		
Total	33	940

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Northeast Oregon Housing Authority/2637
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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
Principal and Consulting Actuary

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

ACTUARIAL VALUATION REPORT
DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Northeast Oregon Housing Authority -- #2637

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Northeast Oregon Housing Authority to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Northeast Oregon Housing Authority

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	18.68%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	0.31%	0.31%	0.31%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**18.30%**	**10.07%**	**14.44%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**18.35%**	**10.07%**	**14.44%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 69%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	15.57%	15.57%
Minimum 2021-2023 Rate	12.46%	9.35%
Maximum 2021-2023 Rate	18.68%	21.79%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	3,384,428	4,509,960	1,125,532	75%	814,583	138%
12/31/2018	3,256,652	4,708,349	1,451,698	69%	931,195	156%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$1,451,697	$1,125,532
Allocated pooled OPSRP UAL	168,140	122,750
Side account	0	0
Net unfunded pension actuarial accrued liability	1,619,837	1,248,282
Combined valuation payroll	931,195	814,583
Net pension UAL as a percentage of payroll	174%	153%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($13,649)	($9,334)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$43,327	$40,574
Tier 1/Tier 2 valuation payroll	231,898	222,818
Tier 1/Tier 2 pension normal cost rate	18.68%	18.21%
Tier 1/ Tier 2 Actuarial accrued liability	$4,708,349	$4,509,960
Actuarial asset value	3,256,652	3,384,428
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,451,697	1,125,532
Tier 1/ Tier 2 Funded status	69%	75%
Combined valuation payroll	$931,195	$814,583
Tier 1/Tier 2 UAL as a percentage of payroll	156%	138%
Tier 1/Tier 2 UAL rate	0.31%	(2.64%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	5	5
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, 2018	December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2018	December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	931,195	814,583
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$528,236	$495,452
2. Employer reserves	1,672,636	1,676,884
3. Benefits in force reserve	1,055,780	1,212,092
4. Total market value of assets ***(1. + 2. + 3.)***	**$3,256,652**	**$3,384,428**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$3,384,428
2.	Regular employer contributions	(7,372)
3.	Benefit payments and expenses	(231,335)
4.	Adjustments [1]	74,459
5.	Interest credited	36,472
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$3,256,652**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	19,509	18,987
Tier 2 Police & Fire	0	0
Tier 2 General Service	23,818	21,587
Total	**$43,327**	**$40,574**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$42,612	$43,327	$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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	658,111	599,021
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	518,298	460,958
▪ **Total Active Members**	**$1,176,409**	**$1,059,979**
Dormant Members	776,811	704,478
Retired Members and Beneficiaries	2,755,129	2,745,503
Total Actuarial Accrued Liability	**$4,708,349**	**$4,509,960**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$4,665,404	$4,708,349	$42,945

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, 2018	December 31, 2017
1. Actuarial accrued liability	$4,708,349	$4,509,960
2. Actuarial value of assets	3,256,652	3,384,428
3. Unfunded accrued liability *(1. – 2.)*	1,451,697	1,125,532
4. Funded percentage *(2. ÷ 1.)*	69%	75%
5. Combined valuation payroll	$931,195	$814,583
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	156%	138%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$1,451,697	$96,101
Total				**$1,451,697**	**$96,101**

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, 2017	$4,509,960
b. Normal cost at December 31, 2017 (excluding assumed expenses)	38,228
c. Benefit payments during 2018	(229,913)
d. Interest at 7.20% to December 31, 2018	317,816
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	4,636,091
f. Change in actuarial accrued liability due to assumption, method, and plan changes	42,945
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	4,679,036
2. Actuarial accrued liability at December 31, 2018	4,708,349
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(29,313)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	3,384,428
b. Contributions for 2018[1]	(7,372)
c. Benefit payments and expenses during 2018	(231,335)
d. Interest at 7.20% to December 31, 2018	235,085
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	3,380,806
5. Actuarial value of assets at December 31, 2018	3,256,652
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(124,154)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($153,467)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$1,125,532**
2. Expected increase	129,754
3. Liability (gain)/loss	29,313
4. Asset (gain)/loss	124,154
5. Change due to changes in assumptions, methods, and plan provisions	42,945
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$1,451,697**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	19,509	78,060	24.99%	18,987	76,502	24.82%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	23,818	153,838	15.48%	21,587	146,316	14.75%
Total	**$43,327**	**$231,898**	**18.68%**	**$40,574**	**$222,818**	**18.21%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$1,451,697	$1,125,532
2. Next year's Tier 1/Tier 2 UAL payment	96,101	86,944
3. Combined valuation payroll	931,195	814,583
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	10.32%	10.67%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	18.68%	18.21%
b. Tier 1/Tier 2 UAL rate	10.32%	10.67%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	29.14%	29.03%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	15.57%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	15.57%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.11%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.11%
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.)*	3.42%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	12.15%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	18.99%
7. Advisory July 1, 2021 total pension rate, before adjustment	29.14%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(10.15%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	10.32%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	0.17%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	18.99%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	18.68%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	18.68%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	18.99%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	18.68%	18.21%
b. Tier 1/Tier 2 UAL rate	0.17%	(2.79%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	18.99%	15.57%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$78,060	$0	$78,060
Tier 2	153,838	0	153,838
Tier 1/Tier 2 valuation payroll	231,898	0	231,898
OPSRP valuation payroll	699,297	0	699,297
Combined valuation payroll	**$931,195**	**$0**	**$931,195**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	2	18	21	1	2	17	20
Police & Fire	0	0	0	0	0	0	0	0
Total	1	2	18	21	1	2	17	20
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	4	1	1	6	4	1	1	6
Police & Fire	0	0	0	0	0	0	0	0
Total	4	1	1	6	4	1	1	6
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	**13**	**4**	**19**	**36**	**13**	**4**	**18**	**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, 2018

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					**2**
65-69							1			**1**
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**0**	**3**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	1,720
50-54		
55-59	2	418
60-64	1	1,583
65-69	1	1,563
70-74		
75+		
Total	5	1,141

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	1	1,246
65-69	5	2,213
70-74	3	2,021
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	9	2,042

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Sweet Home Cemetery/2643
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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

ACTUARIAL VALUATION REPORT DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Sweet Home Cemetery -- #2643

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Sweet Home Cemetery to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Sweet Home Cemetery

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	17.41%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	2.24%	2.24%	2.24%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**18.96%**	**12.00%**	**16.37%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**19.01%**	**12.00%**	**16.37%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 91%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	19.14%	19.14%
Minimum 2021-2023 Rate	15.31%	11.48%
Maximum 2021-2023 Rate	22.97%	26.80%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	504,204	532,476	28,272	95%	137,703	21%
12/31/2018	503,094	549,934	46,840	91%	147,965	32%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$46,840	$28,272
Allocated pooled OPSRP UAL	26,717	20,751
Side account	0	0
Net unfunded pension actuarial accrued liability	73,557	49,023
Combined valuation payroll	147,965	137,703
Net pension UAL as a percentage of payroll	50%	36%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($2,169)	($1,578)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$7,533	$7,181
Tier 1/Tier 2 valuation payroll	43,266	41,976
Tier 1/Tier 2 pension normal cost rate	17.41%	17.11%
Tier 1/ Tier 2 Actuarial accrued liability	$549,934	$532,476
Actuarial asset value	503,094	504,204
Tier 1/Tier 2 Unfunded actuarial accrued liability	46,840	28,272
Tier 1/ Tier 2 Funded status	91%	95%
Combined valuation payroll	$147,965	$137,703
Tier 1/Tier 2 UAL as a percentage of payroll	32%	21%
Tier 1/Tier 2 UAL rate	2.24%	2.03%
(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	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, 2018	December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2018	December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	147,965	137,703
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$91,923	$85,376
2. Employer reserves	287,957	276,350
3. Benefits in force reserve	123,214	142,478
4. Total market value of assets ***(1. + 2. + 3.)***	**$503,094**	**$504,204**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$504,204
2.	Regular employer contributions	11,012
3.	Benefit payments and expenses	(26,998)
4.	Adjustments [1]	7,848
5.	Interest credited	7,027
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$503,094**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	7,533	7,181
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$7,533**	**$7,181**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$7,478	$7,533	$55

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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	228,399	209,751
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$228,399**	**$209,751**
Dormant Members	0	0
Retired Members and Beneficiaries	321,535	322,725
Total Actuarial Accrued Liability	**$549,934**	**$532,476**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$546,932	$549,934	$3,002

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, 2018	December 31, 2017
1. Actuarial accrued liability	$549,934	$532,476
2. Actuarial value of assets	503,094	504,204
3. Unfunded accrued liability *(1. – 2.)*	46,840	28,272
4. Funded percentage *(2. ÷ 1.)*	91%	95%
5. Combined valuation payroll	$147,965	$137,703
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	32%	21%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$46,840	$3,101
Total				**$46,840**	**$3,101**

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, 2017	$532,476
b. Normal cost at December 31, 2017 (excluding assumed expenses)	6,766
c. Benefit payments during 2018	(26,832)
d. Interest at 7.20% to December 31, 2018	37,616
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	550,026
f. Change in actuarial accrued liability due to assumption, method, and plan changes	3,002
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	553,028
2. Actuarial accrued liability at December 31, 2018	549,934
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	3,094
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	504,204
b. Contributions for 2018[1]	11,012
c. Benefit payments and expenses during 2018	(26,998)
d. Interest at 7.20% to December 31, 2018	35,727
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	523,946
5. Actuarial value of assets at December 31, 2018	503,094
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(20,852)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($17,758)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$28,272**
2. Expected increase	(2,192)
3. Liability (gain)/loss	(3,094)
4. Asset (gain)/loss	20,852
5. Change due to changes in assumptions, methods, and plan provisions	3,002
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$46,840**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	7,533	43,266	17.41%	7,181	41,976	17.11%
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	**$7,533**	**$43,266**	**17.41%**	**$7,181**	**$41,976**	**17.11%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$46,840	$28,272
2. Next year's Tier 1/Tier 2 UAL payment	3,101	2,582
3. Combined valuation payroll	147,965	137,703
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	2.10%	1.88%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	17.41%	17.11%
b. Tier 1/Tier 2 UAL rate	2.10%	1.88%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	19.65%	19.14%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	19.14%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	19.14%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.83%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.83%
c. Funded percentage	91%
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.)*	3.83%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	15.31%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	22.97%
7. Advisory July 1, 2021 total pension rate, before adjustment	19.65%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	2.10%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	2.10%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	19.65%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.41%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.41%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	19.65%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	17.41%	17.11%
b. Tier 1/Tier 2 UAL rate	2.10%	1.88%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	19.65%	19.14%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$43,266	$0	$43,266
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	43,266	0	43,266
OPSRP valuation payroll	104,699	0	104,699
Combined valuation payroll	**$147,965**	**$0**	**$147,965**

Employer Member Census

	December 31							
	2018				2017			
	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, 2018

	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, 2018

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	1,880
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	1	1,880

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool's current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Lakeside Water District/2644
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Lakeside Water District -- #2644

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Lakeside Water District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Lakeside Water District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	11.91%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	3.06%	3.06%	3.06%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**14.28%**	**12.82%**	**17.19%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**14.33%**	**12.82%**	**17.19%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 88%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	14.90%	14.90%
Minimum 2021-2023 Rate	11.90%	8.90%
Maximum 2021-2023 Rate	17.90%	20.90%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	636,069	701,123	65,054	91%	195,958	33%
12/31/2018	609,612	689,819	80,207	88%	182,139	44%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$80,207	$65,054
Allocated pooled OPSRP UAL	32,888	29,529
Side account	0	0
Net unfunded pension actuarial accrued liability	113,095	94,583
Combined valuation payroll	182,139	195,958
Net pension UAL as a percentage of payroll	62%	48%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($2,670)	($2,245)

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 the combined valuation payroll 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, 2018	December 31, 2017
Normal cost	$12,480	$11,517
Tier 1/Tier 2 valuation payroll	104,802	97,174
Tier 1/Tier 2 pension normal cost rate	11.91%	11.85%
Tier 1/ Tier 2 Actuarial accrued liability	$689,819	$701,123
Actuarial asset value	609,612	636,069
Tier 1/Tier 2 Unfunded actuarial accrued liability	80,207	65,054
Tier 1/ Tier 2 Funded status	88%	91%
Combined valuation payroll	$182,139	$195,958
Tier 1/Tier 2 UAL as a percentage of payroll	44%	33%
Tier 1/Tier 2 UAL rate	3.06%	3.05%
(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	6	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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	182,139	195,958
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$24,357	$24,196
2. Employer reserves	452,022	432,015
3. Benefits in force reserve	133,233	179,859
4. Total market value of assets ***(1. + 2. + 3.)***	**$609,612**	**$636,069**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$636,069
2. Regular employer contributions	19,055
3. Benefit payments and expenses	(29,193)
4. Adjustments [1]	(17,729)
5. Interest credited	1,409
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$609,612**

[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, 2018	**December 31, 2017**
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	12,480	11,517
Total	**$12,480**	**$11,517**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$12,147	$12,480	$333

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	342,139	293,727
▪ **Total Active Members**	**$342,139**	**$293,727**
Dormant Members	0	0
Retired Members and Beneficiaries	347,680	407,396
Total Actuarial Accrued Liability	**$689,819**	**$701,123**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$684,877	$689,819	$4,942

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, 2018	December 31, 2017
1. Actuarial accrued liability	$689,819	$701,123
2. Actuarial value of assets	609,612	636,069
3. Unfunded accrued liability *(1. – 2.)*	80,207	65,054
4. Funded percentage *(2. ÷ 1.)*	88%	91%
5. Combined valuation payroll	$182,139	$195,958
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	44%	33%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$80,207	$5,310
Total				**$80,207**	**$5,310**

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, 2017	$701,123
b. Normal cost at December 31, 2017 (excluding assumed expenses)	10,851
c. Benefit payments during 2018	(29,014)
d. Interest at 7.20% to December 31, 2018	49,827
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	732,787
f. Change in actuarial accrued liability due to assumption, method, and plan changes	4,942
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	737,729
2. Actuarial accrued liability at December 31, 2018	689,819
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	47,910
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	636,069
b. Contributions for 2018[1]	19,055
c. Benefit payments and expenses during 2018	(29,193)
d. Interest at 7.20% to December 31, 2018	45,432
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	671,364
5. Actuarial value of assets at December 31, 2018	609,612
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(61,752)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($13,842)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$65,054**
2. Expected increase	(3,631)
3. Liability (gain)/loss	(47,910)
4. Asset (gain)/loss	61,752
5. Change due to changes in assumptions, methods, and plan provisions	4,942
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$80,207**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	12,480	104,802	11.91%	11,517	97,174	11.85%
Total	**$12,480**	**$104,802**	**11.91%**	**$11,517**	**$97,174**	**11.85%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$80,207	$65,054
2. Next year's Tier 1/Tier 2 UAL payment	5,310	5,689
3. Combined valuation payroll	182,139	195,958
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	2.92%	2.90%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	11.91%	11.85%
b. Tier 1/Tier 2 UAL rate	2.92%	2.90%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	14.97%	14.90%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	14.90%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	14.90%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	2.98%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	11.90%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	17.90%
7. Advisory July 1, 2021 total pension rate, before adjustment	14.97%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	2.92%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	2.92%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	14.97%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.91%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.91%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	14.97%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	11.91%	11.85%
b. Tier 1/Tier 2 UAL rate	2.92%	2.90%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	14.97%	14.90%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	104,802	0	104,802
Tier 1/Tier 2 valuation payroll	104,802	0	104,802
OPSRP valuation payroll	77,337	0	77,337
Combined valuation payroll	**$182,139**	**$0**	**$182,139**

Employer Member Census

	December 31							
	2018				2017			
	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	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	4	2	0	6	5	2	0	7
Police & Fire	0	0	0	0	0	0	0	0
Total	4	2	0	6	5	2	0	7
Grand Total Number of Members	**4**	**4**	**2**	**10**	**5**	**4**	**3**	**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, 2018

	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, 2018

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	141
70-74	2	494
75-79		
80-84	1	1,266
85-89		
90-94		
95-99		
100+		
Total	6	424

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Chiloquin Agency Lake Rural Fire Protection District/2645
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
Chiloquin Agency Lake Rural Fire Protection District/2645

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Chiloquin Agency Lake Rural Fire Protection District -- #2645

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Chiloquin Agency Lake Rural Fire Protection District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Chiloquin Agency Lake Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Chiloquin Agency Lake Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	18.40%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	5.10%	5.10%	5.10%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**22.81%**	**14.86%**	**19.23%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**22.86%**	**14.86%**	**19.23%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 60%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	20.89%	20.89%
Minimum 2021-2023 Rate	16.71%	12.53%
Maximum 2021-2023 Rate	25.07%	29.25%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$396,856	$391,591	($5,265)	101%	$99,051	(5%)
12/31/2014	332,916	461,228	128,312	72%	32,170	399%
12/31/2015	323,028	479,440	156,412	67%	78,010	201%
12/31/2016	335,602	525,937	190,335	64%	93,438	204%
12/31/2017	368,468	510,664	142,196	72%	53,647	265%
12/31/2018	352,117	589,842	237,724	60%	317,363	75%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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.

Chiloquin Agency Lake Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$237,725	$142,196
Allocated pooled OPSRP UAL	57,304	8,084
Side account	0	0
Net unfunded pension actuarial accrued liability	295,029	150,280
Combined valuation payroll	317,363	53,647
Net pension UAL as a percentage of payroll	93%	280%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($4,652)	($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 the combined valuation payroll 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, 2018	December 31, 2017
Normal cost	$20,991	$0
Tier 1/Tier 2 valuation payroll	114,093	0
Tier 1/Tier 2 pension normal cost rate	18.40%	16.92%
Tier 1/ Tier 2 Actuarial accrued liability	$589,842	$510,664
Actuarial asset value	352,117	368,468
Tier 1/Tier 2 Unfunded actuarial accrued liability	237,725	142,196
Tier 1/ Tier 2 Funded status	60%	72%
Combined valuation payroll	$317,363	$53,647
Tier 1/Tier 2 UAL as a percentage of payroll	75%	265%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	5.10%	3.97%
Tier 1/Tier 2 active members [1]	2	0
Tier 1/Tier 2 dormant members	0	2
Tier 1/Tier 2 retirees and beneficiaries	3	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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	317,363	53,647
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$0	$13,594
2. Employer reserves	183,169	168,601
3. Benefits in force reserve	168,949	186,273
4. Total market value of assets ***(1. + 2. + 3.)***	**$352,117**	**$368,468**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$368,468
2.	Regular employer contributions	27,837
3.	Benefit payments and expenses	(37,019)
4.	Adjustments [1]	(8,847)
5.	Interest credited	1,678
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$352,117**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$17,527	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	3,464	0
Total	**$20,991**	**$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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$20,808	$20,991	$183

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$90,632	$35,875
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	58,327	0
▪ **Total Active Members**	**$148,959**	**$35,875**
Dormant Members	0	52,864
Retired Members and Beneficiaries	440,883	421,925
Total Actuarial Accrued Liability	**$589,842**	**$510,664**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$587,518	$589,842	$2,323

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, 2018	December 31, 2017
1. Actuarial accrued liability	$589,842	$510,664
2. Actuarial value of assets	352,117	368,468
3. Unfunded accrued liability *(1. – 2.)*	237,725	142,196
4. Funded percentage *(2. ÷ 1.)*	60%	72%
5. Combined valuation payroll	$317,363	$53,647
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	75%	265%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$237,725	$15,737
Total				**$237,725**	**$15,737**

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, 2017	$510,664
b. Normal cost at December 31, 2017 (excluding assumed expenses)	0
c. Benefit payments during 2018	(36,791)
d. Interest at 7.20% to December 31, 2018	35,443
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	509,316
f. Change in actuarial accrued liability due to assumption, method, and plan changes	2,323
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	511,639
2. Actuarial accrued liability at December 31, 2018	589,842
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(78,202)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	368,468
b. Contributions for 2018[1]	27,837
c. Benefit payments and expenses during 2018	(37,019)
d. Interest at 7.20% to December 31, 2018	26,199
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	385,485
5. Actuarial value of assets at December 31, 2018	352,117
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(33,368)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($111,570)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$142,196**
2. Expected increase	(18,364)
3. Liability (gain)/loss	78,202
4. Asset (gain)/loss	33,368
5. Change due to changes in assumptions, methods, and plan provisions	2,323
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$237,725**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	$17,527	$82,122	21.34%	$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	3,464	31,971	10.83%	0	0	0.00%
Total	**$20,991**	**$114,093**	**18.40%**	**$0**	**$0**	**16.92%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$237,725	$142,196
2. Next year's Tier 1/Tier 2 UAL payment	15,737	10,852
3. Combined valuation payroll	317,363	53,647
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	4.96%	20.23%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	18.40%	16.92%
b. Tier 1/Tier 2 UAL rate	4.96%	20.23%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	23.50%	37.30%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	20.89%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	20.89%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	4.18%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.18%
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.)*	8.36%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	12.53%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	29.25%
7. Advisory July 1, 2021 total pension rate, before adjustment	23.50%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	4.96%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	4.96%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	23.50%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	18.40%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	18.40%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	23.50%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	18.40%	16.92%
b. Tier 1/Tier 2 UAL rate	4.96%	3.82%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	23.50%	20.89%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$82,122	$82,122
Tier 2	31,971	0	31,971
Tier 1/Tier 2 valuation payroll	31,971	82,122	114,093
OPSRP valuation payroll	203,270	0	203,270
Combined valuation payroll	**$235,241**	**$82,122**	**$317,363**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	7	8	0	0	2	2
Police & Fire	1	0	0	1	0	0	0	0
Total	1	1	7	9	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	1	0	N/A	1
Total	0	0	N/A	0	1	0	N/A	1
Dormant Members								
General Service	0	0	0	0	0	1	0	1
Police & Fire	0	0	0	0	1	0	0	1
Total	0	0	0	0	1	1	0	2
Retired Members and Beneficiaries								
General Service	1	0	0	1	1	0	0	1
Police & Fire	2	0	0	2	1	0	0	1
Total	3	0	0	3	2	0	0	2
Grand Total Number of Members	**4**	**1**	**7**	**12**	**4**	**1**	**2**	**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, 2018

	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										
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, 2018

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	2	1,113
65-69	1	109
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	3	778

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Keno Rural Fire Protection District/2646
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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.

December 2019
Keno Rural Fire Protection District/2646

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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
Keno Rural Fire Protection District/2646

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Keno Rural Fire Protection District -- #2646

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Keno Rural Fire Protection District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Keno Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Keno Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.97%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	523.07%	523.07%	523.07%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**539.35%**	**532.83%**	**537.20%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**539.40%**	**532.83%**	**537.20%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 24%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	N/A	N/A
Minimum 2021-2023 Rate	N/A	N/A
Maximum 2021-2023 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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$881,486	$829,968	($51,518)	106%	$113,276	(45%)
12/31/2014	960,286	1,014,651	54,365	95%	118,700	46%
12/31/2015	1,006,075	1,297,196	291,121	78%	148,894	196%
12/31/2016	1,090,596	1,472,067	381,471	74%	0	0%
12/31/2017	557,472	1,847,250	1,289,778	30%	0	0%
12/31/2018	445,423	1,835,963	1,390,540	24%	17,603	7899%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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.

Keno Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$1,390,540	N/A
Allocated pooled OPSRP UAL	3,178	N/A
Side account	0	N/A
Net unfunded pension actuarial accrued liability	1,393,718	N/A
Combined valuation payroll	17,603	N/A
Net pension UAL as a percentage of payroll	7,918%	N/A
Calculated side account rate relief	0.00%	N/A
Allocated pooled RHIA UAL	($258)	N/A

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$0	N/A
Tier 1/Tier 2 valuation payroll	0	N/A
Tier 1/Tier 2 pension normal cost rate	16.97%	N/A
Tier 1/ Tier 2 Actuarial accrued liability	$1,835,963	N/A
Actuarial asset value	445,423	N/A
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,390,540	N/A
Tier 1/ Tier 2 Funded status	24%	N/A
Combined valuation payroll	$17,603	N/A
Tier 1/Tier 2 UAL as a percentage of payroll	7899%	N/A
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	523.07%	N/A
Tier 1/Tier 2 active members [1]	0	N/A
Tier 1/Tier 2 dormant members	0	N/A
Tier 1/Tier 2 retirees and beneficiaries	4	N/A

[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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	17,603	0
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$7,895	$7,537
2. Employer reserves	(260,696)	(259,982)
3. Benefits in force reserve	698,224	809,916
4. Total market value of assets ***(1. + 2. + 3.)***	**$445,423**	**$557,472**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$557,472
2.	Regular employer contributions	13
3.	Benefit payments and expenses	(152,990)
4.	Adjustments [1]	39,537
5.	Interest credited	1,391
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$445,423**

[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, 2018	December 31, 2017
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, 2018.

	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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$11,738	$10,625
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	2,162	2,088
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$13,900**	**$12,713**
Dormant Members	0	0
Retired Members and Beneficiaries	1,822,063	1,834,537
Total Actuarial Accrued Liability	**$1,835,963**	**$1,847,250**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,854,204	$1,835,963	($18,241)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$1,835,963	N/A
2. Actuarial value of assets	445,423	N/A
3. Unfunded accrued liability *(1. – 2.)*	1,390,540	N/A
4. Funded percentage *(2. ÷ 1.)*	24%	N/A
5. Combined valuation payroll	$17,603	N/A
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	7899%	N/A

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$1,390,540	$92,052
Total				**$1,390,540**	**$92,052**

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, 2017	$1,847,250
b. Normal cost at December 31, 2017 (excluding assumed expenses)	0
c. Benefit payments during 2018	(152,049)
d. Interest at 7.20% to December 31, 2018	127,528
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,822,729
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(18,241)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	1,804,488
2. Actuarial accrued liability at December 31, 2018	1,835,963
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(31,475)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	557,472
b. Contributions for 2018[1]	13
c. Benefit payments and expenses during 2018	(152,990)
d. Interest at 7.20% to December 31, 2018	34,631
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	439,126
5. Actuarial value of assets at December 31, 2018	445,423
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	6,297
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($25,178)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$1,289,778**
2. Expected increase	93,825
3. Liability (gain)/loss	31,475
4. Asset (gain)/loss	(6,297)
5. Change due to changes in assumptions, methods, and plan provisions	(18,241)
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$1,390,540**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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**	**16.97%**	**$0**	**$0**	**16.92%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$1,390,540	N/A
2. Next year's Tier 1/Tier 2 UAL payment	92,052	N/A
3. Combined valuation payroll	17,603	N/A
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	522.93%	N/A

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.97%	N/A
b. Tier 1/Tier 2 UAL rate	522.93%	N/A
c. Multnomah Fire District #10 rate	0.14%	N/A
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	540.04%	N/A

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	N/A
2. Employer contribution rate offset attributable to side accounts	N/A
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	N/A
4. Size of rate collar	
a. 20% of current total 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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	N/A
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	N/A
7. Advisory July 1, 2021 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, 2021 Tier 1/Tier 2 UAL rate, before collar	N/A
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	N/A
11. Advisory July 1, 2021 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, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	N/A
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	N/A
16. Advisory July 1, 2021 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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.97%	N/A
b. Tier 1/Tier 2 UAL rate	522.93%	N/A
c. Multnomah Fire District #10 rate	0.14%	N/A
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	540.04%	N/A

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	17,603	17,603
Combined valuation payroll	**$0**	**$17,603**	**$17,603**

Employer Member Census

	December 31							
	2018				2017			
	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	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	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	2	1	0	3	2	1	0	3
Total	3	1	0	4	3	1	0	4
Grand Total Number of Members	**4**	**5**	**0**	**9**	**4**	**5**	**0**	**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, 2018

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, 2018

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	490
65-69	2	5,084
70-74		
75-79	1	26
80-84		
85-89		
90-94		
95-99		
100+		
Total	4	2,671

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Black Butte Ranch Rural Fire Protection District/2648
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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

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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
Black Butte Ranch Rural Fire Protection District/2648

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Black Butte Ranch Rural Fire Protection District -- #2648

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Black Butte Ranch Rural Fire Protection District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Black Butte Ranch Rural Fire Protection District.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Black Butte Ranch Rural Fire Protection District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	22.27%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	(1.02%)	(1.02%)	(1.02%)
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**20.56%**	**8.74%**	**13.11%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**20.61%**	**8.74%**	**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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 71%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	17.71%	17.71%
Minimum 2021-2023 Rate	14.17%	10.63%
Maximum 2021-2023 Rate	21.25%	24.79%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$4,050,159	$3,942,757	($107,402)	103%	$750,341	(14%)
12/31/2014	4,211,458	4,795,182	583,724	88%	776,122	75%
12/31/2015	4,197,702	5,051,937	854,235	83%	791,350	108%
12/31/2016	4,380,583	5,340,729	960,146	82%	801,913	120%
12/31/2017	4,386,800	5,816,979	1,430,179	75%	716,835	200%
12/31/2018	4,212,358	5,946,098	1,733,740	71%	675,599	257%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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.

Black Butte Ranch Rural Fire Protection District

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$1,733,740	$1,430,179
Allocated pooled OPSRP UAL	121,989	108,021
Side account	0	0
Net unfunded pension actuarial accrued liability	1,855,729	1,538,200
Combined valuation payroll	675,599	716,835
Net pension UAL as a percentage of payroll	275%	215%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($9,903)	($8,214)

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 the combined valuation payroll 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, 2018	December 31, 2017
Normal cost	$53,978	$52,696
Tier 1/Tier 2 valuation payroll	242,375	240,173
Tier 1/Tier 2 pension normal cost rate	22.27%	21.94%
Tier 1/ Tier 2 Actuarial accrued liability	$5,946,098	$5,816,979
Actuarial asset value	4,212,358	4,386,800
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,733,740	1,430,179
Tier 1/ Tier 2 Funded status	71%	75%
Combined valuation payroll	$675,599	$716,835
Tier 1/Tier 2 UAL as a percentage of payroll	257%	200%
Tier 1/Tier 2 UAL rate	(1.02%)	(4.23%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	2	2
Tier 1/Tier 2 dormant members	4	3
Tier 1/Tier 2 retirees and beneficiaries	14	13

[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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	675,599	716,835
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$520,645	$522,471
2. Employer reserves	2,306,938	2,298,753
3. Benefits in force reserve	1,384,775	1,565,576
4. Total market value of assets ***(1. + 2. + 3.)***	**$4,212,358**	**$4,386,800**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$4,386,800
2.	Regular employer contributions	2,933
3.	Benefit payments and expenses	(303,423)
4.	Adjustments [1]	90,684
5.	Interest credited	35,364
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$4,212,358**

[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, 2018	**December 31, 2017**
Tier 1 Police & Fire	$24,938	$24,730
Tier 1 General Service	0	0
Tier 2 Police & Fire	29,040	27,966
Tier 2 General Service	0	0
Total	**$53,978**	**$52,696**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$53,710	$53,978	$268

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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$1,299,500	$1,272,756
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	674,681	642,134
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$1,974,181**	**$1,914,890**
Dormant Members	358,254	355,911
Retired Members and Beneficiaries	3,613,663	3,546,178
Total Actuarial Accrued Liability	**$5,946,098**	**$5,816,979**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$5,940,453	$5,946,098	$5,645

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, 2018	December 31, 2017
1. Actuarial accrued liability	$5,946,098	$5,816,979
2. Actuarial value of assets	4,212,358	4,386,800
3. Unfunded accrued liability *(1. – 2.)*	1,733,740	1,430,179
4. Funded percentage *(2. ÷ 1.)*	71%	75%
5. Combined valuation payroll	$675,599	$716,835
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	257%	200%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$1,733,740	$114,772
Total				**$1,733,740**	**$114,772**

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, 2017	$5,816,979
b. Normal cost at December 31, 2017 (excluding assumed expenses)	49,554
c. Benefit payments during 2018	(301,557)
d. Interest at 7.20% to December 31, 2018	409,750
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	5,974,726
f. Change in actuarial accrued liability due to assumption, method, and plan changes	5,645
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	5,980,371
2. Actuarial accrued liability at December 31, 2018	5,946,098
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	34,273
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	4,386,800
b. Contributions for 2018[1]	2,933
c. Benefit payments and expenses during 2018	(303,423)
d. Interest at 7.20% to December 31, 2018	305,032
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	4,391,343
5. Actuarial value of assets at December 31, 2018	4,212,358
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(178,984)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($144,711)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$1,430,179**
2. Expected increase	153,205
3. Liability (gain)/loss	(34,273)
4. Asset (gain)/loss	178,984
5. Change due to changes in assumptions, methods, and plan provisions	5,645
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$1,733,740**

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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	$24,938	$110,794	22.51%	$24,730	$113,659	21.76%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	29,040	131,581	22.07%	27,966	126,514	22.11%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$53,978**	**$242,375**	**22.27%**	**$52,696**	**$240,173**	**21.94%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$1,733,740	$1,430,179
2. Next year's Tier 1/Tier 2 UAL payment	114,772	104,887
3. Combined valuation payroll	675,599	716,835
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	16.99%	14.63%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	22.27%	21.94%
b. Tier 1/Tier 2 UAL rate	16.99%	14.63%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	39.40%	36.72%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	17.71%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	17.71%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.54%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.54%
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.)*	3.54%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	14.17%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	21.25%
7. Advisory July 1, 2021 total pension rate, before adjustment	39.40%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(18.15%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	16.99%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(1.16%)
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	21.25%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	22.27%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	22.27%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	21.25%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	22.27%	21.94%
b. Tier 1/Tier 2 UAL rate	(1.16%)	(4.38%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	21.25%	17.71%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$110,794	$110,794
Tier 2	0	131,581	131,581
Tier 1/Tier 2 valuation payroll	0	242,375	242,375
OPSRP valuation payroll	61,372	371,852	433,224
Combined valuation payroll	**$61,372**	**$614,227**	**$675,599**

Employer Member Census

	December 31							
	2018				2017			
	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	1	5	7	1	1	4	6
Total	1	1	6	8	1	1	5	7
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	3	1	N/A	4	4	2	N/A	6
Total	3	1	N/A	4	4	2	N/A	6
Dormant Members								
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
Retired Members and Beneficiaries								
General Service	1	0	0	1	1	0	0	1
Police & Fire	13	0	0	13	12	0	0	12
Total	14	0	0	14	13	0	0	13
Grand Total Number of Members	**20**	**4**	**6**	**30**	**20**	**4**	**5**	**29**

[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, 2018

	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				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, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	1	1,039
45-49	2	1,240
50-54		
55-59	1	618
60-64		
65-69		
70-74		
75+		
Total	4	1,034

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	1	6,563
55-59		
60-64	4	958
65-69	2	1,710
70-74	1	527
75-79	4	1,084
80-84	2	883
85-89		
90-94		
95-99		
100+		
Total	14	1,460

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Applegate Valley Rural Fire Protection District #9/2664
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
Applegate Valley Rural Fire Protection District #9/2664

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Applegate Valley Rural Fire Protection District #9 -- #2664

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Applegate Valley Rural Fire Protection District #9 to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Applegate Valley Rural Fire Protection District #9.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Applegate Valley Rural Fire Protection District #9

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.73%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	5.14%	5.14%	5.14%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**26.18%**	**14.90%**	**19.27%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**26.23%**	**14.90%**	**19.27%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 56%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	19.19%	19.19%
Minimum 2021-2023 Rate	15.35%	11.51%
Maximum 2021-2023 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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$2,030,453	$1,929,051	($101,402)	105%	$528,604	(19%)
12/31/2014	2,207,562	2,393,369	185,807	92%	533,698	35%
12/31/2015	2,240,228	2,653,532	413,304	84%	626,420	66%
12/31/2016	2,039,923	3,002,366	962,443	68%	485,055	198%
12/31/2017	2,323,187	3,279,212	956,025	71%	676,567	141%
12/31/2018	2,021,448	3,596,039	1,574,591	56%	598,015	263%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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.

Applegate Valley Rural Fire Protection District #9

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$1,574,591	$956,025
Allocated pooled OPSRP UAL	107,980	101,953
Side account	0	0
Net unfunded pension actuarial accrued liability	1,682,571	1,057,978
Combined valuation payroll	598,015	676,567
Net pension UAL as a percentage of payroll	281%	156%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($8,766)	($7,752)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$68,503	$69,784
Tier 1/Tier 2 valuation payroll	315,267	381,781
Tier 1/Tier 2 pension normal cost rate	21.73%	18.28%
Tier 1/ Tier 2 Actuarial accrued liability	$3,596,039	$3,279,212
Actuarial asset value	2,021,448	2,323,187
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,574,591	956,025
Tier 1/ Tier 2 Funded status	56%	71%
Combined valuation payroll	$598,015	$676,567
Tier 1/Tier 2 UAL as a percentage of payroll	263%	141%
Tier 1/Tier 2 UAL rate	5.14%	0.91%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	4	4
Tier 1/Tier 2 dormant members	0	1
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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	598,015	676,567
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$107,102	$291,476
2. Employer reserves	1,111,539	1,398,580
3. Benefits in force reserve	802,807	633,131
4. Total market value of assets *(1. + 2. + 3.)*	**$2,021,448**	**$2,323,187**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$2,323,187
2.	Regular employer contributions	44,867
3.	Benefit payments and expenses	(175,906)
4.	Adjustments [1]	(193,827)
5.	Interest credited	23,127
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,021,448**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	66,830	69,784
Tier 2 General Service	1,673	0
Total	**$68,503**	**$69,784**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$68,286	$68,503	$217

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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$0	$277,811
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	1,499,225	1,317,397
▪ Tier 2 General Service	1,835	0
▪ **Total Active Members**	**$1,501,060**	**$1,595,208**
Dormant Members	0	249,904
Retired Members and Beneficiaries	2,094,979	1,434,100
Total Actuarial Accrued Liability	**$3,596,039**	**$3,279,212**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$3,607,327	$3,596,039	($11,288)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$3,596,039	$3,279,212
2. Actuarial value of assets	2,021,448	2,323,187
3. Unfunded accrued liability *(1. – 2.)*	1,574,591	956,025
4. Funded percentage *(2. ÷ 1.)*	56%	71%
5. Combined valuation payroll	$598,015	$676,567
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	263%	141%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$1,574,591	$104,236
Total				**$1,574,591**	**$104,236**

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, 2017	$3,279,212
b. Normal cost at December 31, 2017 (excluding assumed expenses)	65,749
c. Benefit payments during 2018	(174,824)
d. Interest at 7.20% to December 31, 2018	232,177
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	3,402,313
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(11,288)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	3,391,025
2. Actuarial accrued liability at December 31, 2018	3,596,039
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(205,014)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	2,323,187
b. Contributions for 2018[1]	44,867
c. Benefit payments and expenses during 2018	(175,906)
d. Interest at 7.20% to December 31, 2018	162,552
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	2,354,700
5. Actuarial value of assets at December 31, 2018	2,021,448
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(333,252)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($538,266)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$956,025**
2. Expected increase	91,588
3. Liability (gain)/loss	205,014
4. Asset (gain)/loss	333,252
5. Change due to changes in assumptions, methods, and plan provisions	(11,288)
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$1,574,591**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	66,830	306,387	21.81%	69,784	381,781	18.28%
Tier 2 General Service	1,673	8,880	18.84%	0	0	0.00%
Total	**$68,503**	**$315,267**	**21.73%**	**$69,784**	**$381,781**	**18.28%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$1,574,591	$956,025
2. Next year's Tier 1/Tier 2 UAL payment	104,236	69,063
3. Combined valuation payroll	598,015	676,567
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	17.43%	10.21%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	21.73%	18.28%
b. Tier 1/Tier 2 UAL rate	17.43%	10.21%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	39.30%	28.64%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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 offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	19.19%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.84%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.84%
c. Funded percentage	56%
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.)*	7.68%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	11.51%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	26.87%
7. Advisory July 1, 2021 total pension rate, before adjustment	39.30%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(12.43%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	17.43%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	5.00%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	26.87%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	21.73%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.73%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	26.87%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	21.73%	18.28%
b. Tier 1/Tier 2 UAL rate	5.00%	0.76%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	26.87%	19.19%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	8,880	306,387	315,267
Tier 1/Tier 2 valuation payroll	8,880	306,387	315,267
OPSRP valuation payroll	47,498	235,250	282,748
Combined valuation payroll	**$56,378**	**$541,637**	**$598,015**

Employer Member Census

	December 31							
	2018				2017			
	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	4	3	7	0	4	4	8
Total	0	4	4	8	0	4	5	9
Active Members with previous service segments with the employer								
General Service	0	1	N/A	1	0	0	N/A	0
Police & Fire	0	3	N/A	3	1	4	N/A	5
Total	0	4	N/A	4	1	4	N/A	5
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	1	1	1	0	0	1
Total	0	0	1	1	1	0	0	1
Retired Members and Beneficiaries								
General Service	0	1	0	1	0	1	0	1
Police & Fire	5	0	0	5	3	0	0	3
Total	5	1	0	6	3	1	0	4
Grand Total Number of Members	**5**	**9**	**5**	**19**	**5**	**9**	**5**	**19**

[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, 2018

	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										
60-64					1					**1**
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, 2018

Dormant Members			Retired Members and Beneficiaries		
Age	**Count**	**Average Deferred Monthly Benefit**	**Age**	**Count**	**Average Monthly Benefit**
<20			**<45**		
20-24			**45-49**		
25-29			**50-54**	1	2,022
30-34			**55-59**	1	4,362
35-39			**60-64**	1	1,121
40-44			**65-69**	1	176
45-49			**70-74**	2	1,998
50-54			**75-79**		
55-59			**80-84**		
60-64			**85-89**		
65-69			**90-94**		
70-74			**95-99**		
75+			**100+**		
Total			**Total**	6	1,946

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Rockwood Water PUD/2672
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Rockwood Water PUD -- #2672

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Rockwood Water PUD to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Rockwood Water PUD

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	14.42%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	12.36%	12.36%	12.36%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**26.09%**	**22.12%**	**26.49%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**26.14%**	**22.12%**	**26.49%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 65%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	21.14%	21.14%
Minimum 2021-2023 Rate	16.91%	12.68%
Maximum 2021-2023 Rate	25.37%	29.60%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	6,500,210	9,087,858	2,587,648	72%	1,347,237	192%
12/31/2018	6,087,503	9,322,256	3,234,754	65%	1,752,878	185%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$3,234,753	$2,587,647
Allocated pooled OPSRP UAL	316,506	203,017
Side account	0	0
Net unfunded pension actuarial accrued liability	3,551,259	2,790,664
Combined valuation payroll	1,752,878	1,347,237
Net pension UAL as a percentage of payroll	203%	207%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($25,693)	($15,437)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$78,501	$73,401
Tier 1/Tier 2 valuation payroll	544,217	515,735
Tier 1/Tier 2 pension normal cost rate	14.42%	14.23%
Tier 1/ Tier 2 Actuarial accrued liability	$9,322,256	$9,087,858
Actuarial asset value	6,087,503	6,500,211
Tier 1/Tier 2 Unfunded actuarial accrued liability	3,234,753	2,587,647
Tier 1/ Tier 2 Funded status	65%	72%
Combined valuation payroll	$1,752,878	$1,347,237
Tier 1/Tier 2 UAL as a percentage of payroll	185%	192%
Tier 1/Tier 2 UAL rate	12.36%	6.91%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	6	6
Tier 1/Tier 2 dormant members	6	8
Tier 1/Tier 2 retirees and beneficiaries	23	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, 2018	December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2018	December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	1,752,878	1,347,237
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$557,905	$829,682
2. Employer reserves	2,939,074	2,994,465
3. Benefits in force reserve	2,590,523	2,676,063
4. Total market value of assets ***(1. + 2. + 3.)***	**$6,087,503**	**$6,500,211**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$6,500,211
2. Regular employer contributions	133,509
3. Benefit payments and expenses	(567,618)
4. Adjustments [1]	(29,099)
5. Interest credited	50,501
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$6,087,503**

[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, 2018	**December 31, 2017**
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	33,578	32,169
Tier 2 Police & Fire	0	0
Tier 2 General Service	44,923	41,232
Total	**$78,501**	**$73,401**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Normal Cost	$76,675	$78,501	$1,826

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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	622,221	556,031
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	1,262,410	1,090,959
▪ **Total Active Members**	**$1,884,631**	**$1,646,990**
Dormant Members	677,479	1,379,334
Retired Members and Beneficiaries	6,760,146	6,061,535
Total Actuarial Accrued Liability	**$9,322,256**	**$9,087,858**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$9,280,735	$9,322,256	$41,522

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, 2018	December 31, 2017
1. Actuarial accrued liability	$9,322,256	$9,087,858
2. Actuarial value of assets	6,087,503	6,500,211
3. Unfunded accrued liability *(1. – 2.)*	3,234,753	2,587,647
4. Funded percentage *(2. ÷ 1.)*	65%	72%
5. Combined valuation payroll	$1,752,878	$1,347,237
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	185%	192%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$3,234,753	$214,137
Total				**$3,234,753**	**$214,137**

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, 2017	$9,087,858
b. Normal cost at December 31, 2017 (excluding assumed expenses)	69,157
c. Benefit payments during 2018	(564,128)
d. Interest at 7.20% to December 31, 2018	636,507
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	9,229,394
f. Change in actuarial accrued liability due to assumption, method, and plan changes	41,522
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	9,270,916
2. Actuarial accrued liability at December 31, 2018	9,322,256
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(51,341)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	6,500,211
b. Contributions for 2018[1]	133,509
c. Benefit payments and expenses during 2018	(567,618)
d. Interest at 7.20% to December 31, 2018	452,387
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	6,518,488
5. Actuarial value of assets at December 31, 2018	6,087,503
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(430,986)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($482,327)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$2,587,647**
2. Expected increase	123,257
3. Liability (gain)/loss	51,341
4. Asset (gain)/loss	430,986
5. Change due to changes in assumptions, methods, and plan provisions	41,522
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$3,234,753**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	33,578	137,260	24.46%	32,169	129,516	24.84%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	44,923	406,957	11.04%	41,232	386,219	10.68%
Total	**$78,501**	**$544,217**	**14.42%**	**$73,401**	**$515,735**	**14.23%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$3,234,753	$2,587,647
2. Next year's Tier 1/Tier 2 UAL payment	214,137	202,076
3. Combined valuation payroll	1,752,878	1,347,237
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	12.22%	15.00%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	14.42%	14.23%
b. Tier 1/Tier 2 UAL rate	12.22%	15.00%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	26.78%	29.38%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	21.14%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	21.14%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	4.23%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	4.23%
c. Funded percentage	65%
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.)*	6.35%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	14.79%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	27.49%
7. Advisory July 1, 2021 total pension rate, before adjustment	26.78%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	12.22%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	12.22%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	26.78%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	14.42%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	14.42%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	26.78%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	14.42%	14.23%
b. Tier 1/Tier 2 UAL rate	12.22%	6.76%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	26.78%	21.14%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$137,260	$0	$137,260
Tier 2	406,957	0	406,957
Tier 1/Tier 2 valuation payroll	544,217	0	544,217
OPSRP valuation payroll	1,208,661	0	1,208,661
Combined valuation payroll	**$1,752,878**	**$0**	**$1,752,878**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	4	16	22	2	4	11	17
Police & Fire	0	0	0	0	0	0	0	0
Total	2	4	16	22	2	4	11	17
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	5	1	4	10	7	1	3	11
Police & Fire	0	0	0	0	0	0	0	0
Total	5	1	4	10	7	1	3	11
Retired Members and Beneficiaries								
General Service	22	1	0	23	20	1	0	21
Police & Fire	0	0	0	0	0	0	0	0
Total	22	1	0	23	20	1	0	21
Grand Total Number of Members	**30**	**7**	**20**	**57**	**30**	**7**	**14**	**51**

[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, 2018

	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							1			**1**
60-64						1				**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**3**	**1**	**1**	**1**	**0**	**0**	**6**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	0
50-54	2	1,492
55-59	2	1,120
60-64		
65-69		
70-74	1	0
75+		
Total	6	871

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	3,701
60-64	5	1,865
65-69	7	2,341
70-74	6	1,324
75-79	1	218
80-84		
85-89	2	1,376
90-94		
95-99	1	2,031
100+		
Total	23	1,842

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Salmon Harbor-Douglas County/2675
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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

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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Salmon Harbor-Douglas County -- #2675

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Salmon Harbor-Douglas County to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Salmon Harbor-Douglas County

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	11.57%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	5.84%	5.84%	5.84%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**16.72%**	**15.60%**	**19.97%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**16.77%**	**15.60%**	**19.97%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 75%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	14.41%	14.41%
Minimum 2021-2023 Rate	11.41%	8.41%
Maximum 2021-2023 Rate	17.41%	20.41%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	1,587,616	1,847,506	259,890	86%	464,842	56%
12/31/2018	1,469,589	1,951,313	481,723	75%	498,021	97%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$481,724	$259,890
Allocated pooled OPSRP UAL	89,925	70,048
Side account	0	0
Net unfunded pension actuarial accrued liability	571,649	329,938
Combined valuation payroll	498,021	464,842
Net pension UAL as a percentage of payroll	115%	71%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($7,300)	($5,326)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$22,956	$21,158
Tier 1/Tier 2 valuation payroll	198,441	185,709
Tier 1/Tier 2 pension normal cost rate	11.57%	11.39%
Tier 1/ Tier 2 Actuarial accrued liability	$1,951,313	$1,847,506
Actuarial asset value	1,469,589	1,587,616
Tier 1/Tier 2 Unfunded actuarial accrued liability	481,724	259,890
Tier 1/ Tier 2 Funded status	75%	86%
Combined valuation payroll	$498,021	$464,842
Tier 1/Tier 2 UAL as a percentage of payroll	97%	56%
Tier 1/Tier 2 UAL rate	5.84%	3.02%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	3	4
Tier 1/Tier 2 dormant members	3	3
Tier 1/Tier 2 retirees and beneficiaries	11	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, 2018	December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	December 31, 2018	December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	498,021	464,842
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$87,052	$106,507
2. Employer reserves	877,579	981,718
3. Benefits in force reserve	504,959	499,391
4. Total market value of assets ***(1. + 2. + 3.)***	**$1,469,589**	**$1,587,616**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$1,587,616
2.	Regular employer contributions	23,987
3.	Benefit payments and expenses	(110,643)
4.	Adjustments [1]	(43,257)
5.	Interest credited	11,887
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,469,589**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	12,672	11,647
Tier 2 Police & Fire	0	0
Tier 2 General Service	10,284	9,511
Total	**$22,956**	**$21,158**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$22,324	$22,956	$632

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	431,503	373,699
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	196,838	337,675
▪ **Total Active Members**	**$628,341**	**$711,374**
Dormant Members	5,247	4,964
Retired Members and Beneficiaries	1,317,725	1,131,168
Total Actuarial Accrued Liability	**$1,951,313**	**$1,847,506**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,939,106	$1,951,313	$12,206

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, 2018	December 31, 2017
1. Actuarial accrued liability	$1,951,313	$1,847,506
2. Actuarial value of assets	1,469,589	1,587,616
3. Unfunded accrued liability *(1. – 2.)*	481,724	259,890
4. Funded percentage *(2. ÷ 1.)*	75%	86%
5. Combined valuation payroll	$498,021	$464,842
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	97%	56%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$481,724	$31,890
Total				**$481,724**	**$31,890**

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, 2017	$1,847,506
b. Normal cost at December 31, 2017 (excluding assumed expenses)	19,935
c. Benefit payments during 2018	(109,963)
d. Interest at 7.20% to December 31, 2018	129,779
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,887,257
f. Change in actuarial accrued liability due to assumption, method, and plan changes	12,206
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	1,899,463
2. Actuarial accrued liability at December 31, 2018	1,951,313
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(51,849)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	1,587,616
b. Contributions for 2018[1]	23,987
c. Benefit payments and expenses during 2018	(110,643)
d. Interest at 7.20% to December 31, 2018	111,189
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	1,612,148
5. Actuarial value of assets at December 31, 2018	1,469,589
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(142,559)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($194,408)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$259,890**
2. Expected increase	15,219
3. Liability (gain)/loss	51,849
4. Asset (gain)/loss	142,559
5. Change due to changes in assumptions, methods, and plan provisions	12,206
6. UAL at December 31, 2018 *(1. + 2. + 3. + 4. + 5.)*	**$481,724**

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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	12,672	98,477	12.87%	11,647	92,840	12.55%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	10,284	99,964	10.29%	9,511	92,869	10.24%
Total	**$22,956**	**$198,441**	**11.57%**	**$21,158**	**$185,709**	**11.39%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$481,724	$259,890
2. Next year's Tier 1/Tier 2 UAL payment	31,890	18,925
3. Combined valuation payroll	498,021	464,842
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	6.40%	4.07%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	11.57%	11.39%
b. Tier 1/Tier 2 UAL rate	6.40%	4.07%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	18.11%	15.61%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	14.41%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	14.41%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	2.88%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	11.41%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	17.41%
7. Advisory July 1, 2021 total pension rate, before adjustment	18.11%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.70%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	6.40%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	5.70%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	17.41%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.57%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.57%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.41%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	11.57%	11.39%
b. Tier 1/Tier 2 UAL rate	5.70%	2.87%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	17.41%	14.41%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$98,477	$0	$98,477
Tier 2	99,964	0	99,964
Tier 1/Tier 2 valuation payroll	198,441	0	198,441
OPSRP valuation payroll	299,580	0	299,580
Combined valuation payroll	**$498,021**	**$0**	**$498,021**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	2	8	11	1	3	9	13
Police & Fire	0	0	0	0	0	0	0	0
Total	1	2	8	11	1	3	9	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	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	3	5	8	0	3	3	6
Police & Fire	0	0	0	0	0	0	0	0
Total	0	3	5	8	0	3	3	6
Retired Members and Beneficiaries								
General Service	8	3	0	11	7	2	0	9
Police & Fire	0	0	0	0	0	0	0	0
Total	8	3	0	11	7	2	0	9
Grand Total Number of Members	**9**	**8**	**13**	**30**	**8**	**8**	**12**	**28**

[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, 2018

	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										
50-54					1					1
55-59			1							1
60-64										
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, 2018

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		
55-59	1	22
60-64		
65-69		
70-74	1	170
75+		
Total	3	64

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	2	809
65-69	2	1,555
70-74	5	650
75-79	1	275
80-84		
85-89	1	1,809
90-94		
95-99		
100+		
Total	11	915

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool's current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Central Oregon Regional Housing Authority/2678
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
Central Oregon Regional Housing Authority/2678

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, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Central Oregon Regional Housing Authority -- #2678

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Central Oregon Regional Housing Authority to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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 Central Oregon Regional Housing Authority.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Central Oregon Regional Housing Authority

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	11.11%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	5.87%	5.87%	5.87%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**16.29%**	**15.63%**	**20.00%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**16.34%**	**15.63%**	**20.00%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 70%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	13.98%	13.98%
Minimum 2021-2023 Rate	10.98%	7.98%
Maximum 2021-2023 Rate	16.98%	19.98%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$2,099,560	$1,894,256	($205,304)	111%	$727,584	(28%)
12/31/2014	2,167,404	2,217,679	50,275	98%	859,032	6%
12/31/2015	2,101,985	2,427,624	325,639	87%	985,333	33%
12/31/2016	2,033,244	2,668,624	635,380	76%	1,114,284	57%
12/31/2017	2,256,034	2,735,752	479,718	82%	1,200,311	40%
12/31/2018	2,036,026	2,896,960	860,934	70%	964,134	89%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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.

Central Oregon Regional Housing Authority

	Actuarial Valuation as of	
	December 31, 2018	**December 31, 2017**
T1/T2 UAL	$860,934	$479,718
Allocated pooled OPSRP UAL	174,088	180,876
Side account	0	0
Net unfunded pension actuarial accrued liability	1,035,022	660,594
Combined valuation payroll	964,134	1,200,311
Net pension UAL as a percentage of payroll	107%	55%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($14,132)	($13,753)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$13,527	$25,486
Tier 1/Tier 2 valuation payroll	121,801	228,995
Tier 1/Tier 2 pension normal cost rate	11.11%	11.13%
Tier 1/ Tier 2 Actuarial accrued liability	$2,896,960	$2,735,752
Actuarial asset value	2,036,026	2,256,034
Tier 1/Tier 2 Unfunded actuarial accrued liability	860,934	479,718
Tier 1/ Tier 2 Funded status	70%	82%
Combined valuation payroll	$964,134	$1,200,311
Tier 1/Tier 2 UAL as a percentage of payroll	89%	40%
Tier 1/Tier 2 UAL rate	5.87%	2.85%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	1	2
Tier 1/Tier 2 dormant members	5	6
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, 2018	Actuarial Valuation as of December 31, 2017
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions) **RHIA**	Actuarial Valuation as of December 31, 2018	Actuarial Valuation as of December 31, 2017
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	964,134	1,200,311
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$118,750	$212,121
2. Employer reserves	998,161	1,178,245
3. Benefits in force reserve	919,115	865,668
4. Total market value of assets *(1. + 2. + 3.)*	**$2,036,026**	**$2,256,034**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$2,256,034
2.	Regular employer contributions	31,173
3.	Benefit payments and expenses	(201,390)
4.	Adjustments [1]	(69,032)
5.	Interest credited	19,241
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,036,026**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	12,337
Tier 2 Police & Fire	0	0
Tier 2 General Service	13,527	13,149
Total	**$13,527**	**$25,486**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$13,329	$13,527	$198

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	111,439	392,310
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	356,202	341,159
▪ **Total Active Members**	**$467,641**	**$733,469**
Dormant Members	30,826	41,465
Retired Members and Beneficiaries	2,398,493	1,960,819
Total Actuarial Accrued Liability	**$2,896,960**	**$2,735,752**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,902,288	$2,896,960	($5,328)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$2,896,960	$2,735,752
2. Actuarial value of assets	2,036,026	2,256,034
3. Unfunded accrued liability *(1. – 2.)*	860,934	479,718
4. Funded percentage *(2. ÷ 1.)*	70%	82%
5. Combined valuation payroll	$964,134	$1,200,311
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	89%	40%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$860,934	$56,993
Total				**$860,934**	**$56,993**

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, 2017	$2,735,752
b. Normal cost at December 31, 2017 (excluding assumed expenses)	24,013
c. Benefit payments during 2018	(200,152)
d. Interest at 7.20% to December 31, 2018	190,633
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,750,247
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(5,328)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	2,744,919
2. Actuarial accrued liability at December 31, 2018	2,896,960
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(152,041)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	2,256,034
b. Contributions for 2018[1]	31,173
c. Benefit payments and expenses during 2018	(201,390)
d. Interest at 7.20% to December 31, 2018	156,307
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	2,242,123
5. Actuarial value of assets at December 31, 2018	2,036,026
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(206,098)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($358,139)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$479,718**
2. Expected increase	28,405
3. Liability (gain)/loss	152,041
4. Asset (gain)/loss	206,098
5. Change due to changes in assumptions, methods, and plan provisions	(5,328)
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$860,934**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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%	12,337	109,763	11.24%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	13,527	121,801	11.11%	13,149	119,232	11.03%
Total	**$13,527**	**$121,801**	**11.11%**	**$25,486**	**$228,995**	**11.13%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$860,934	$479,718
2. Next year's Tier 1/Tier 2 UAL payment	56,993	34,267
3. Combined valuation payroll	964,134	1,200,311
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	5.91%	2.85%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	11.11%	11.13%
b. Tier 1/Tier 2 UAL rate	5.91%	2.85%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	17.16%	14.13%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	13.98%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	13.98%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	2.80%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	10.98%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	16.98%
7. Advisory July 1, 2021 total pension rate, before adjustment	17.16%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(0.18%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	5.91%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	5.73%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	16.98%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.11%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.11%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	16.98%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	11.11%	11.13%
b. Tier 1/Tier 2 UAL rate	5.73%	2.70%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	16.98%	13.98%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	121,801	0	121,801
Tier 1/Tier 2 valuation payroll	121,801	0	121,801
OPSRP valuation payroll	842,333	0	842,333
Combined valuation payroll	**$964,134**	**$0**	**$964,134**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	14	15	1	1	15	17
Police & Fire	0	0	0	0	0	0	0	0
Total	0	1	14	15	1	1	15	17
Active Members with previous service segments with the employer								
General Service	1	3	N/A	4	1	3	N/A	4
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	1	3	N/A	4	1	3	N/A	4
Dormant Members								
General Service	3	2	3	8	4	2	3	9
Police & Fire	0	0	0	0	0	0	0	0
Total	3	2	3	8	4	2	3	9
Retired Members and Beneficiaries								
General Service	11	5	1	17	10	5	0	15
Police & Fire	0	0	0	0	0	0	0	0
Total	11	5	1	17	10	5	0	15
Grand Total Number of Members	**15**	**11**	**18**	**44**	**16**	**11**	**18**	**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, 2018

	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**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	1	0
50-54	2	47
55-59		
60-64		
65-69		
70-74	1	69
75+	1	702
Total	5	173

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	2	1,300
60-64	4	1,860
65-69	3	448
70-74	4	467
75-79	2	233
80-84	1	9
85-89		
90-94		
95-99		
100+		
Total	16	858

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	$8.0 million, added to OPSRP normal cost. $32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Columbia River Public Utility District/2679
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman

December 2019
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
Principal and Consulting Actuary

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

Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Columbia River Public Utility District -- #2679

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Columbia River Public Utility District to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Columbia River Public Utility District

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	12.88%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	12.55%	12.55%	12.55%
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**24.74%**	**22.31%**	**26.68%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**24.79%**	**22.31%**	**26.68%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 64%.

Funded Status as of December 31, 2019	70% to 130%	Under 60% or Over 140%
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	19.27%	19.27%
Minimum 2021-2023 Rate	15.42%	11.57%
Maximum 2021-2023 Rate	23.12%	26.97%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	15,931,873	23,278,600	7,346,727	68%	4,379,090	168%
12/31/2018	15,343,981	24,144,319	8,800,339	64%	4,106,428	214%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$8,800,338	$7,346,727
Allocated pooled OPSRP UAL	741,473	659,890
Side account	0	0
Net unfunded pension actuarial accrued liability	9,541,811	8,006,617
Combined valuation payroll	4,106,428	4,379,090
Net pension UAL as a percentage of payroll	232%	183%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($60,191)	($50,176)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$181,350	$241,551
Tier 1/Tier 2 valuation payroll	1,408,007	1,918,403
Tier 1/Tier 2 pension normal cost rate	12.88%	12.59%
Tier 1/ Tier 2 Actuarial accrued liability	$24,144,319	$23,278,600
Actuarial asset value	15,343,981	15,931,873
Tier 1/Tier 2 Unfunded actuarial accrued liability	8,800,338	7,346,727
Tier 1/ Tier 2 Funded status	64%	68%
Combined valuation payroll	$4,106,428	$4,379,090
Tier 1/Tier 2 UAL as a percentage of payroll	214%	168%
Tier 1/Tier 2 UAL rate	12.55%	6.68%
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	12	17
Tier 1/Tier 2 dormant members	19	14
Tier 1/Tier 2 retirees and beneficiaries	26	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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	4,106,428	4,379,090
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$2,228,504	$2,269,873
2. Employer reserves	7,771,914	7,759,177
3. Benefits in force reserve	5,343,562	5,902,822
4. Total market value of assets *(1. + 2. + 3.)*	**$15,343,981**	**$15,931,873**

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, 2017 to December 31, 2018
1.	Market value of assets at beginning of year	$15,931,873
2.	Regular employer contributions	324,398
3.	Benefit payments and expenses	(1,170,845)
4.	Adjustments [1]	188,443
5.	Interest credited	70,113
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)***	**$15,343,981**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	80,800	108,959
Tier 2 Police & Fire	0	0
Tier 2 General Service	100,550	132,592
Total	**$181,350**	**$241,551**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$177,959	$181,350	$3,391

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, 2018	**December 31, 2017**
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	3,340,451	3,879,150
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	2,339,885	3,173,089
▪ **Total Active Members**	**$5,680,336**	**$7,052,239**
Dormant Members	4,519,597	2,855,913
Retired Members and Beneficiaries	13,944,386	13,370,447
Total Actuarial Accrued Liability	**$24,144,319**	**$23,278,600**

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, 2018.

	Before Changes	**After Changes**	**Net Change**
Actuarial Accrued Liability	$24,133,189	$24,144,319	$11,131

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, 2018	December 31, 2017
1. Actuarial accrued liability	$24,144,319	$23,278,600
2. Actuarial value of assets	15,343,981	15,931,873
3. Unfunded accrued liability *(1. – 2.)*	8,800,338	7,346,727
4. Funded percentage *(2. ÷ 1.)*	64%	68%
5. Combined valuation payroll	$4,106,428	$4,379,090
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	214%	168%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$8,800,338	$582,572
Total				**$8,800,338**	**$582,572**

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, 2017	$23,278,600
b. Normal cost at December 31, 2017 (excluding assumed expenses)	227,588
c. Benefit payments during 2018	(1,163,646)
d. Interest at 7.20% to December 31, 2018	1,642,361
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	23,984,903
f. Change in actuarial accrued liability due to assumption, method, and plan changes	11,131
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	23,996,034
2. Actuarial accrued liability at December 31, 2018	24,144,319
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(148,286)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	15,931,873
b. Contributions for 2018[1]	324,398
c. Benefit payments and expenses during 2018	(1,170,845)
d. Interest at 7.20% to December 31, 2018	1,116,623
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	16,202,047
5. Actuarial value of assets at December 31, 2018	15,343,981
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(858,067)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($1,006,353)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**$7,346,727**
2. Expected increase	436,128
3. Liability (gain)/loss	148,286
4. Asset (gain)/loss	858,067
5. Change due to changes in assumptions, methods, and plan provisions	11,131
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$8,800,338**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	80,800	618,587	13.06%	108,959	743,002	14.66%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	100,550	789,420	12.74%	132,592	1,175,401	11.28%
Total	**$181,350**	**$1,408,007**	**12.88%**	**$241,551**	**$1,918,403**	**12.59%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$8,800,338	$7,346,727
2. Next year's Tier 1/Tier 2 UAL payment	582,572	556,240
3. Combined valuation payroll	4,106,428	4,379,090
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	14.19%	12.70%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	12.88%	12.59%
b. Tier 1/Tier 2 UAL rate	14.19%	12.70%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	27.21%	25.44%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	19.27%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	19.27%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	3.85%
b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.85%
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.)*	6.16%
5. Advisory July 1, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	13.11%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	25.43%
7. Advisory July 1, 2021 total pension rate, before adjustment	27.21%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(1.78%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	14.19%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	12.41%
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	25.43%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	12.88%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	12.88%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	25.43%

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, 2021 Rates calculated as of December 31, 2018	July 1, 2019 Rates calculated as of December 31, 2017
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	12.88%	12.59%
b. Tier 1/Tier 2 UAL rate	12.41%	6.53%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	25.43%	19.27%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$618,587	$0	$618,587
Tier 2	789,420	0	789,420
Tier 1/Tier 2 valuation payroll	1,408,007	0	1,408,007
OPSRP valuation payroll	2,698,421	0	2,698,421
Combined valuation payroll	**$4,106,428**	**$0**	**$4,106,428**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	4	8	28	40	6	11	29	46
Police & Fire	0	0	0	0	0	0	0	0
Total	4	8	28	40	6	11	29	46
Active Members with previous service segments with the employer								
General Service	0	2	N/A	2	0	3	N/A	3
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	2	N/A	2	0	3	N/A	3
Dormant Members								
General Service	6	13	4	23	5	9	4	18
Police & Fire	0	0	0	0	0	0	0	0
Total	6	13	4	23	5	9	4	18
Retired Members and Beneficiaries								
General Service	25	1	2	28	24	1	1	26
Police & Fire	0	0	0	0	0	0	0	0
Total	25	1	2	28	24	1	1	26
Grand Total Number of Members	**35**	**24**	**34**	**93**	**35**	**24**	**34**	**93**

[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, 2018

	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				3	1					**4**
50-54				2	1					**3**
55-59				1						**1**
60-64				2			2			**4**
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**8**	**2**	**0**	**2**	**0**	**0**	**12**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	**Count**	**Average Deferred Monthly Benefit**
<20		
20-24		
25-29		
30-34		
35-39		
40-44	2	875
45-49	4	1,717
50-54	5	1,548
55-59	5	2,417
60-64	3	2,836
65-69		
70-74		
75+		
Total	19	1,945

Retired Members and Beneficiaries

Age	**Count**	**Average Monthly Benefit**
<45		
45-49		
50-54	1	4,698
55-59	1	3,416
60-64	10	3,023
65-69	5	4,443
70-74	5	3,380
75-79	4	829
80-84		
85-89		
90-94		
95-99		
100+		
Total	26	3,106

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634

December 2019

Oregon Community College Association/2685
Oregon Public Employees Retirement System

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, 2018. Information to assist you in preparing your required financial reporting disclosures under Statement 68 and Statement 75 of the Governmental Accounting Standards Board (GASB) 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, 2021 through June 30, 2023 will be calculated in the December 31, 2019 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2018, as modified by Senate Bill 1049 which was enacted in June 2019. The report also reflects the Tier 1/Tier 2 reamortization provisions of Senate Bill 1049. 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 actuarialservices@pers.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, 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 October 2019.

The actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2021 to June 2023 for System employers. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and with our understanding of the System benefit provisions described in the appendices of this report. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

December 2019
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

ACTUARIAL VALUATION REPORT DECEMBER 31, 2018

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

Oregon Community College Association -- #2685

December 2019

CONTENTS

Executive Summary

Milliman has prepared this report for Oregon Community College Association to:

- Provide summary December 31, 2018 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, 2018 on estimated employer-specific contribution rates effective July 1, 2021 through June 30, 2023, and
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2018.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2018 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, 2018 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 2021 - 2023 Employer Rates Calculated as of December 31, 2018 for Oregon Community College Association

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.68%	8.70%	13.07%
Tier 1/Tier 2 UAL rate[1]	(2.52%)	(2.52%)	(2.52%)
OPSRP UAL rate	1.76%	1.76%	1.76%
Side account rate relief [2]	0.00%	0.00%	0.00%
Member redirect offset [3]	(2.45%)	(0.70%)	(0.70%)
Net employer pension contribution rate	**13.47%**	**7.24%**	**11.61%**
Retiree Healthcare			
Normal cost rate	0.05%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	**0.05%**	**0.00%**	**0.00%**
Total net employer contribution rate	**13.52%**	**7.24%**	**11.61%**

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.*

2 *The side account rate relief shown may be reduced such that the net pension contribution rate does not go below 0.00%.*

3 *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) are anticipated to offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Total Pension Contribution Rates for the July 2021 to June 2023 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, 2021, which will depend on the funded status as of December 31, 2019. 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, 2018 is 100%.

Funded Status as of December 31, 2019	**70% to 130%**	**Under 60% or Over 140%**
2019-2021 Tier 1/Tier 2 Normal Cost + Tier 1/Tier 2 UAL Rate	11.16%	11.16%
Minimum 2021-2023 Rate	8.16%	5.16%
Maximum 2021-2023 Rate	14.16%	17.16%

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 (GASB 68), which replaced Statement No. 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)
12/31/2013	$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%
12/31/2017	2,049,314	1,984,630	(64,684)	103%	552,695	(12%)
12/31/2018	2,005,871	2,011,914	6,043	100%	598,028	1%

Executive Summary

Accounting Information (continued)

Retiree Healthcare

In June 2015, the GASB issued Statement No. 75 (GASB 75), which replaced Statement No. 45 and governs 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 the Retiree Health Insurance Account (RHIA) 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, 2018	**December 31, 2017**
T1/T2 UAL	$6,043	($64,684)
Allocated pooled OPSRP UAL	107,982	83,286
Side account	0	0
Net unfunded pension actuarial accrued liability	114,025	18,602
Combined valuation payroll	598,028	552,695
Net pension UAL as a percentage of payroll	19%	3%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($8,766)	($6,333)

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 the combined valuation payroll 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, 2018	**December 31, 2017**
Normal cost	$46,734	$27,070
Tier 1/Tier 2 valuation payroll	280,171	218,351
Tier 1/Tier 2 pension normal cost rate	16.68%	12.40%
Tier 1/ Tier 2 Actuarial accrued liability	$2,011,914	$1,984,630
Actuarial asset value	2,005,871	2,049,314
Tier 1/Tier 2 Unfunded actuarial accrued liability	6,043	(64,684)
Tier 1/ Tier 2 Funded status	100%	103%
Combined valuation payroll	$598,028	$552,695
Tier 1/Tier 2 UAL as a percentage of payroll	1%	(12%)
Tier 1/Tier 2 UAL rate	(2.52%)	(1.24%)
(includes Multnomah Fire District #10)		
Tier 1/Tier 2 active members [1]	2	2
Tier 1/Tier 2 dormant members	2	0
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, 2018	**December 31, 2017**
General service normal cost	$519.9	$435.7
OPSRP general service valuation payroll	5,973.4	5,187.5
General service normal cost rate	8.70%	8.40%
Police and fire normal cost	$104.9	$86.6
OPSRP police and fire valuation payroll	802.5	664.5
Police and fire normal cost rate	13.07%	13.03%
Actuarial accrued liability	$6,738.0	$5,634.7
Actuarial asset value	4,783.0	4,116.5
Unfunded actuarial accrued liability	1,955.0	1,518.2
Funded status	71%	73%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	18%	15%
UAL rate	1.76%	1.45%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2018**	**December 31, 2017**
Normal cost	$2.2	$2.5
Tier 1 / Tier 2 valuation payroll	4,076.1	4,246.9
Normal cost rate	0.05%	0.06%
Actuarial accrued liability	$411.7	$437.6
Actuarial asset value	570.7	553.3
Unfunded actuarial accrued liability	(159.1)	(115.7)
Funded status	139%	126%
Combined valuation payroll	$10,852.0	$10,098.9
UAL as a percentage of payroll	(1%)	(1%)
UAL rate	0.00%	0.00%

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, 2017	**N/A**		
2. Deposits made during 2018			
3. Administrative expenses			
4. Amount transferred to employer reserves during 2018			
5. Side account earnings during 2018			
6. Side account as of December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***			

Side Account Information

Side Account Balances

	December 31, 2018	December 31, 2017
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, 2018	December 31, 2017
1. Total side account	$0	$0
2. Combined valuation payroll	598,028	552,695
3. Average Amortization factor	7.606	8.312
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, 2018	December 31, 2017
1. Member reserves	$253,724	$248,733
2. Employer reserves	1,395,054	1,388,327
3. Benefits in force reserve	357,093	412,254
4. Total market value of assets ***(1. + 2. + 3.)***	**$2,005,871**	**$2,049,314**

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, 2017 to December 31, 2018
1. Market value of assets at beginning of year	$2,049,314
2. Regular employer contributions	2,045
3. Benefit payments and expenses	(78,244)
4. Adjustments [1]	24,844
5. Interest credited	7,912
6. Total transferred from side accounts	0
7. Market value of assets at end of year ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$2,005,871**

[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, 2018	December 31, 2017
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	36,890	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	9,844	27,070
Total	**$46,734**	**$27,070**

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, 2018.

	Before Changes	After Changes	Net Change
Normal Cost	$46,526	$46,734	$208

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, 2018	December 31, 2017
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	178,551	170,692
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	553,379	880,145
▪ **Total Active Members**	**$731,930**	**$1,050,837**
Dormant Members	348,127	0
Retired Members and Beneficiaries	931,857	933,793
Total Actuarial Accrued Liability	**$2,011,914**	**$1,984,630**

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, 2018.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,024,822	$2,011,914	($12,908)

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, 2018	December 31, 2017
1. Actuarial accrued liability	$2,011,914	$1,984,630
2. Actuarial value of assets	2,005,871	2,049,314
3. Unfunded accrued liability *(1. – 2.)*	6,043	(64,684)
4. Funded percentage *(2. ÷ 1.)*	100%	103%
5. Combined valuation payroll	$598,028	$552,695
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	1%	(12%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20 year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts 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. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that, effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer will be re-amortized over a 22 year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board will again have authority to set the amortization schedule. It is anticipated that the policy of 20-year closed-period amortization schedules will be reintroduced at that point. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2019, with the estimate based on experience through the end of 2018.

Amortization Base	UAL December 31, 2017	Payment	Interest	UAL December 31, 2018	Next Year's Payment
December 31, 2018	N/A	N/A	N/A	$6,043	$400
Total				**$6,043**	**$400**

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, 2017	$1,984,630
b. Normal cost at December 31, 2017 (excluding assumed expenses)	25,505
c. Benefit payments during 2018	(77,763)
d. Interest at 7.20% to December 31, 2018	141,012
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,073,384
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(12,908)
g. Expected actuarial accrued liability at December 31, 2018 *(e. + f.)*	2,060,476
2. Actuarial accrued liability at December 31, 2018	2,011,914
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	48,562
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2017	2,049,314
b. Contributions for 2018[1]	2,045
c. Benefit payments and expenses during 2018	(78,244)
d. Interest at 7.20% to December 31, 2018	144,807
e. Expected actuarial value of assets at December 31, 2018 *(a. + b. + c. + d.)*	2,117,923
5. Actuarial value of assets at December 31, 2018	2,005,871
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(112,052)
7. Total actuarial gain/(loss) ***(3. + 6.)***	**($63,490)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2017 is provided below.

1. UAL at December 31, 2017	**($64,684)**
2. Expected increase	20,145
3. Liability (gain)/loss	(48,562)
4. Asset (gain)/loss	112,052
5. Change due to changes in assumptions, methods, and plan provisions	(12,908)
6. UAL at December 31, 2018 ***(1. + 2. + 3. + 4. + 5.)***	**$6,043**

[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. Normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

Development of Tier 1/Tier 2 Total Normal Cost Rate

	December 31, 2018			December 31, 2017		
	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	36,890	205,518	17.95%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	9,844	74,653	13.19%	27,070	218,351	12.40%
Total	**$46,734**	**$280,171**	**16.68%**	**$27,070**	**$218,351**	**12.40%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost rate 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, 2018	December 31, 2017
1. Total Tier 1/Tier 2 UAL	$6,043	($64,684)
2. Next year's Tier 1/Tier 2 UAL payment	400	(7,705)
3. Combined valuation payroll	598,028	552,695
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	0.07%	(1.39%)

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.68%	12.40%
b. Tier 1/Tier 2 UAL rate	0.07%	(1.39%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	16.89%	11.16%

Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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 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, 2019 through June 30, 2021, develops the maximum and minimum advisory contribution rates effective July 1, 2021 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	11.16%
2. Employer contribution rate offset attributable to side accounts	0.00%
3. Current total Tier 1/Tier 2 pension contribution rate (1. – 2.)	11.16%
4. Size of rate collar	
a. 20% of current total contribution rate (20% x 3.)	2.23%
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, 2021 minimum total contribution rate (3. – 4.d. but not < 0%)	8.16%
6. Advisory July 1, 2021 maximum total contribution rate (3. + 4.d.)	14.16%
7. Advisory July 1, 2021 total pension rate, before adjustment	16.89%
8. Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(2.73%)
9. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, before collar	0.07%
10. Advisory July 1, 2021 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(2.66%)
11. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after collar	14.16%
12. Tier 1/Tier 2 retiree healthcare rate	0.05%
13. Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.68%
15. Advisory July 1, 2021 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.68%
16. Advisory July 1, 2021 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	14.16%

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, 2021 Rates calculated as of December 31, 2018	**July 1, 2019 Rates calculated as of December 31, 2017**
1. Tier 1/Tier 2 pension contribution rates		
a. Tier 1/Tier 2 pension normal cost rate	16.68%	12.40%
b. Tier 1/Tier 2 UAL rate	(2.66%)	(1.39%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.95%)*	14.16%	11.16%

Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$205,518	$0	$205,518
Tier 2	74,653	0	74,653
Tier 1/Tier 2 valuation payroll	280,171	0	280,171
OPSRP valuation payroll	317,857	0	317,857
Combined valuation payroll	**$598,028**	**$0**	**$598,028**

Employer Member Census

	December 31							
	2018				2017			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	1	3	5	0	2	4	6
Police & Fire	0	0	0	0	0	0	0	0
Total	1	1	3	5	0	2	4	6
Active Members with previous service segments with the employer								
General Service	3	4	N/A	7	3	4	N/A	7
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	3	4	N/A	7	3	4	N/A	7
Dormant Members								
General Service	0	2	0	2	0	0	0	0
Police & Fire	0	0	0	0	0	0	0	0
Total	0	2	0	2	0	0	0	0
Retired Members and Beneficiaries								
General Service	7	0	1	8	7	0	1	8
Police & Fire	0	0	0	0	0	0	0	0
Total	7	0	1	8	7	0	1	8
Grand Total Number of Members	**11**	**7**	**4**	**22**	**10**	**6**	**5**	**21**

[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, 2018

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				1						**1**
55-59										
60-64							1			**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**2**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2018

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	1	3,466
55-59		
60-64		
65-69	1	50
70-74		
75+		
Total	2	1,758

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	2	893
65-69	2	1,239
70-74	1	624
75-79		
80-84	1	1,120
85-89	1	582
90-94		
95-99		
100+		
Total	7	941

Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2018 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. Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	The contribution rate stabilization method, also referred to as the rate collar, is applied separately to each Tier 1/Tier 2 experience sharing pool (State and Local Government Rate Pool, School Districts) and independent employer. The collar's centering point for Tier 1/Tier 2 calculations is the sum of the Tier 1/Tier 2 Normal Cost and Tier 1/Tier 2 UAL Rates currently in effect. In the subsequent biennium, the increase in the sum of those two rate components is limited by the collar to 20% of the current sum of those two rate components, or 3% of payroll, if greater. If the funded status excluding side accounts is less than 70%, the width of the collar widens on a graded scale, reaching 40% of the current sum of the two rate components or 6% of payroll, if greater, if funded status excluding side accounts is 60% or less. A separate but parallel rate collar calculation is performed for the sum of the OPSRP Normal Cost and OPSRP UAL rates based on the funded status of the OPSRP program.

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 7.1% in 2019 to 4.1% in 2094.
Administrative Expenses	\$8.0 million, added to OPSRP normal cost. \$32.5 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, 2017 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Allocation Procedures

Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.

Changes in Economic Assumptions

- **Administrative Expenses**

  Administrative expenses were assumed to be $8.0 million per year for the OPSRP System and $32.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  The updated mortality assumption uses the Pub-2010 base mortality tables (published in 2019) with group-specific job category adjustments. A projection scale for continued future mortality improvement based on the 60-year average of observed Social Security mortality improvement is applied generationally to the base tables.

- **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, 2018 actuarial valuation is contained in the system-wide actuarial valuation report.

Brief Summary of Changes in Plan Provisions

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.

Senate Bill 1049, signed into law in June 2019, made a number of changes to the PERS system, including:

- Effective with calendar year 2020, annual salary included in the calculation of Final Average Salary will be limited to $195,000 (as indexed for inflation in future years).
- The PERS Board was required to implement a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22 year period at the December 31, 2019 rate-setting actuarial valuation, which will set actuarially determined contribution rates for the 2021-2023 biennium.
- For years 2020 through 2024, the limitation on the hours that can be worked by a rehired retire is eliminated. Effective January 1, 2020, contributions will also be charged on the payroll of rehired retirees.
- Effective July 1, 2020, a portion of the 6% of salary member contribution to the Individual Account Program (IAP) will be redirected to Employee Pension Stability Accounts, which will help fund the defined benefits provided under Tier 1/Tier 2 and OPSRP. For Tier 1/Tier 2 members, the prospectively redirected amount will be 2.5% of salary, and for OPSRP members the amount will be 0.75% of salary. The redirection will only apply to members earning $2,500 per month or more (indexed for inflation).

The projected benefits in this valuation reflect the limit on annual salary starting in 2020, which reduced the actuarial accrued liability. The re-amortization of Tier 1/Tier 2 UAL is incorporated in the calculation of the advisory Tier 1/Tier 2 UAL rate. The changes related to the work after retirement provisions are not explicitly reflected in the determination of liabilities or contribution rates shown in this valuation. Our understanding is that redirected member contributions are expected to help pay the total collared contribution rates adopted for the 2021-2023 biennium and will serve as an offset to employer contributions, and we have illustrated that offset for advisory 2021-2023 rates shown in this 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.

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 contribution rate setting methodology that defines the maximum biennium-to-biennium change in the sum of the normal cost rate and the associated UAL rate for a given experience-sharing pool. The width of the collar is determined by the pool’s current normal cost rate, UAL 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 prior to GASB 75.

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

Milliman
1455 SW Broadway, Suite 1600
Portland, OR 97201-3412
503 227 0634